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SYSTEMATIC REVIEW

The Social Cognitions of Victims of Bullying: A Systematic Review

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Abstract

The nature of the relation between victimization of bullying and social information processing is unclear. The prevention hypothesis predicts that victims focus more on negative social cues to prevent further escalation. In contrast, the reaffiliation hypothesis predicts that victims focus more on positive social cues to restore the social situation. Alternatively, the desensitization hypothesis predicts that victims become increasingly insensitive to social cues because of a numbing effect. This systematic review examines evidence for these three hypotheses on the relation between victimization and social information processing. The focus is on two phases of social information processing: encoding of social information (attending to and registration of social cues) and interpreting social information (making sense of multiple social cues simultaneously). These phases are important prerequisites for behavioral responses. The systematic search led to the inclusion of 142 articles, which were published between 1998 and 2021 and received quality assessment. The studies included on average about 1600 participants (range: 14–25,684), who were on average 11.4 years old (range: 4.1–17.0). The topics covered in the literature included attention to and accurate registration of social cues, peer perception, attribution of situations, empathy, and theory of mind. The results were most often in line with the prevention hypothesis and suggested that victimization is related to a negative social-cognitive style, as shown by a more negative perception of peers in general and more negative situational attribution. Victimization seemed unrelated to abilities to empathize or understand others, which contradicted the desensitization hypothesis. However, desensitization may only occur after prolonged and persistent victimization, which to date has been sparsely studied. The reaffiliation hypothesis could not be thoroughly examined, because most studies did not include positive social cues. In bullying prevention, it is important to consider the negative social information processing style related to victimization, because this style may impede the development of positive social interactions.

Keywords Social information processing · Victimization · Bullying · Attribution bias · Encoding · Empathy

Introduction

Seeing is believing, or so is the expression. People can see the same things but interpret them differently. In social situations, this can lead to misunderstandings and may, in the case of bullying, lead to unwanted negative spirals. Social cognition refers to how individuals construct their (subjective) social reality. It involves psychological and cognitive processes of how a person processes, stores, and applies information about the social world (Ostrom, 1984). When children are the victim of repeated, intentionally aggressive, or hurtful behavior from a powerful perpetrator, such as in bullying (Olweus, 1993), it is likely to affect how they experience their social world and may affect their general social cognitive tendencies. This may have long lasting consequences, even into adulthood, as victims report more mental health problems, lower levels of academic achievement,

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and poorer social relationships (Arseneault, 2018). A better understanding of the effects of victimization on social cognition of victims is needed, as social cognition likely influences (the perception of) new social interactions, and thus play a role in the victimization process. To date, it is unclear how victimization relates to different aspects of social cognition, as many studies only examine a subcomponent of this highly complex construct. Therefore, this systematic review provides an overview of the literature on the relation between victimization and different aspects of social cognition.

Bullying is a social process (Salmivalli, 2010). Both bullies and victims influence social interactions by sending and interpreting social messages. The past experiences and the social-cognitive thinking style of children influence how these social messages are received. According to the social information processing (SIP) model (Crick & Dodge, 1994), the social-cognitive processes can be organized in six subsequent steps or phases. The first two phases refer to the selection and interpretation of social cues: *encoding* (which cues are registered) and *interpretation* (interpreting the combined meaning of all registered cues). For example, perceiving someone's facial expression without any interpretation is part of the encoding phase, whereas thinking about why someone is laughing contains a subjective component and is therefore an interpretation. A feedback loop exists between encoding and interpretation, such that interpretation can influence encoding of subsequent social cues. The last four SIP-phases refer to cognitive processes which enable an individual to form a behavioral response: *goal selection*, *construction of possible responses*, *response choice*, and the *execution of the chosen response* (Crick & Dodge, 1994). Finally, each person has a *database* which includes memories, schemas, and social knowledge that influence each SIP-phase (Crick & Dodge, 1994). For example, if people get to know each other (knowledge and memories), the interpretation of the other's intentions will improve. While the database concurrently influences the SIP-phases, it is also simultaneously updated with new experiences. The updated database, in turn, influences future encoding, interpretation, and behavioral responses, possibly leading to the development of negative spirals. Victims are likely to have difficulties in sending and interpreting social information, as they seem to have poorer social cognition and social skills (Fox & Boulton, 2005).

No matter whether it is a precursor or consequence of victimization, having difficulties in social cognition (or social intelligence, see Kaukiainen et al., 2002) may relate to being victimized. Based on the SIP-model, prior victimization experiences likely affect how victims encode, interpret, and respond to social cues as their past experiences color the interpretation of new social situations. First, victims may have a positive social-cognitive style and focus on positive social cues and interpretations to facilitate reaffiliation (Bernstein, 2003; Pickett & Gardner, 2005), called the *reaffiliation hypothesis* in this review. In line with this hypothesis, socially excluded people tend to focus more on positive social cues (Buckner et al., 2010) and have better memory recall for positive events (DeWall et al., 2011). Second, instead of focusing on positive social cues, victims may develop a negative social-cognitive style and focus more on negative social cues or threat, and detect such stimuli more rapidly, to prevent subsequent negative interactions (Rapee & Heimberg, 1997), the *prevention hypothesis*. In line with this, previous studies have found that anxious individuals tend to focus on negative information (Bar-Haim et al., 2007), lonely individuals expect more rejection by others (Spithoven et al., 2017), and victims of all types of events (e.g., natural disasters and crime) are prone to interpret hostile intent (van Reemst et al., 2016). Third, victims may become increasingly insensitive to social information, the *desensitization hypothesis*, as repeated victimization might lead to an insensitivity to all kinds of social information (Bernstein, 2003). However, to date, it is unclear what the nature of this relation is.

Current Study

The aim of the present study was to examine the relation between victimization and social cognition (encoding and interpretation) in children and adolescents through a systematic literature review. The results were interpreted in light of hypotheses that were formed on the relation between victimization and social cognition: the *reaffiliation* (focus on positive social cues to reaffiliate), *prevention* (focus on negative social cues to avoid future victimization), and *desensitization* (numbing or insensitivity to social cues) *hypotheses*.

Methods

Search Strategy

The systematic review was carried out in line with the PRISMA guidelines (Moher et al., 2009). Search terms were included for victimization and social cognition in three databases (PsycInfo, Web of Science, ERIC), see the identification block in Fig. 1 and Online Source 1. The literature search was executed in July 2018 and updated in February 2021.

Study Selection

The presented results are of the combined initial search and update. The search resulted in 7628 hits (PsycInfo: 3477,

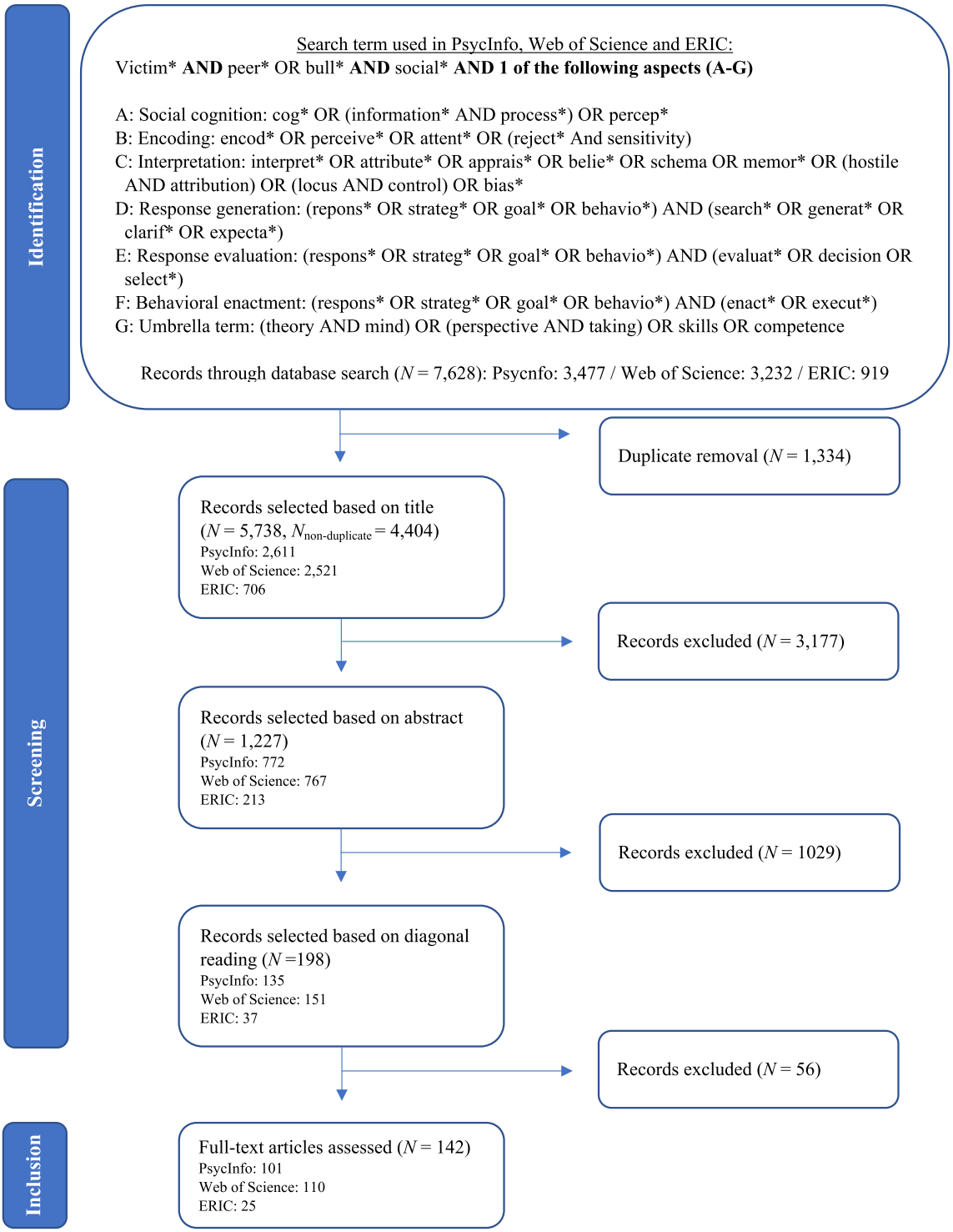

Fig. 1 Flow diagram of the selection process of the articles. In the first box you read the utilized search term and the hits per database. In the following blocks you can see the other article selection phases (title deselection, abstract reading, diagonal reading & full-text reading)

Web of Science (WoS): 3232, ERIC: 919). 1890 hits were excluded, if they had titles unrelated to the topic (e.g., other victimization types, such as gang violence), were not peer-reviewed publications (to warrant study quality), or were not written in English. After removal of 1334 duplicates, 4404 articles were left (PsycInfo: 2611, WoS: 2521, ERIC: 706). In round two, the abstracts were read and articles were selected only when they referred to victimization of

bullying or social cognition. This round resulted in 1227 articles (PsycInfo: 772, WoS: 767, ERIC: 213). In round three, diagonal reading, the articles were scanned for relevant information and selected articles that examined the relation between social cognition and victimization and had a particular focus on either encoding or interpretation. Articles were excluded if they included participants older than 18 years, or if they examined coping, attribution style (internal/external, stable/unstable, controllable/uncontrollable), general social skills, or if they examined the last four phases of the SIP-model (behavioral response). During the first search in 2018, two researchers independently did round three, the diagonal reading. Inter-rater reliability for selection in this round was 89.9% (79.3% for the first 100 and 91.5% for the remaining articles). In case of disagreement, the researchers discussed the article and respective arguments, to come to an agreement. During the search update in 2021 one researcher read the articles because of the high inter-rater reliability obtained during the first search. Diagonal reading resulted in 198 included articles (PsycInfo: 135, WoS: 151, ERIC: 37).

These 198 articles were read thoroughly by the first author. An additional 56 articles (15 first search, 42 search update) were excluded (e.g., focus on rejection instead of victimization or because of participant age either being younger than 4 or older than 18). This led to an inclusion of 142 articles in the review (PsycInfo: 101, WoS: 110, ERIC: 25), published between 1998 and 2021. Studies included on average about 1600 participants (*Median* = 390, range: 14–25,684), who were on average 11.4 years old (range: 4.1–17.0). Figure 1 provides the selection flow diagram. Online Source 1 contains details on the selection process.

Quality Assessment

The commonly used Newcastle–Ottawa Scale for study quality assessment (Wells et al., 2000) was adjusted for the purposes of this systematic review. Studies were evaluated on sample, measures, and method in relation to our aim: examining the relation between social cognition and victimization of bullying. Sample referred to the representativeness of the sample, the appropriateness of the sample size, the non-response, and the participant characteristics. Measures referred to the measurement of victimization as well as social cognition, and the use of control variables. Method referred to the type of study (longitudinal/cross-sectional), pre-registration, the use of descriptives, and the use of statistics. The first author assessed the quality, which was replicated by the third author for 10% of the studies. The interrater reliability for this subset was satisfactory ($r = 0.84$, $p < 0.001$; ICC = 0.89, $p < 0.001$).The included studies received between 4 and 13 points out of the possible 16 ($M = 8.50$, $SD = 1.82$), with a notable exception of one receiving 1 point (see Online Source 2a Table S3 for the quality assessment per study and Online Source 2b for details). Studies most often lost points on not including effect sizes and response rates, using non-validated measures, not having a longitudinal design, and not pre-registering the study. Generally, the overall quality of the studies seems unsatisfactory, which demonstrates possible improvements for research designs.

Results

The results are organized based on the two aspects of social cognition: encoding and interpretation (first two SIP-phases) in relation to victimization of bullying. Within each SIP-phase, results are categorized in subdomains, based on topics addressed in the articles. Results were interpreted in light of the *reaffiliation, prevention,* and *desensitization hypotheses.*

Victimization and the Encoding of Social Information

The articles on encoding, the first SIP-phase, examined which cues were attended to (selection) and whether cues were registered as what they objectively were (accurate registration).

Selection of Social Cues

Selection of social cues, or attention, refers to how perceptual, motor, and cognitive systems are allocated to potentially competing information-processing demands. It involves both conscious and unconscious selection to different social cues (Anderson, 2015).

Only four studies examined victimization in relation to attention (see Table 1); therefore, conclusions are preliminary. Based on the *reaffiliation hypothesis,* it was expected that victims would attend predominantly to positive social cues, in order to identify possibilities to restore social relationships. However, most studies focused exclusively on negative social information. One study examined differences in the attention to emotions between victims and non-victims, but neither specified valence of emotions nor found support for victims differing in attention to others' emotions compared with peers (Hussein, 2013). Therefore, no conclusions could be drawn for the *reaffiliation hypothesis*.

Based on the *prevention hypothesis,* it was expected that victims would attend predominantly to negative social cues, to prevent further negative interactions. There was support for this hypothesis, as frequent victimization was associated with a higher likelihood to notice bullying events in real life (Jenkins & Nickerson, 2017). Another study examined visual attention to bullying scenarios, and showed that

Table 1 Study results on selection of cues (attention)

Reference	Sample	Design	Measures	Results
Hussein (2013)	623 children, 10–12 years, EGY	CS	**Victimization**: PIPSQ, SR-Q **Attention**: EAQC-R, SR-Q	Victims/bullies/bully-victims did not attend more to others' emotions than non-involved children ($OR_{victim} = 0.98$, $p = 0.70$; $OR_{bully} = 0.99$, $p = 0.91$; $OR_{bully\text{-}victim}$ 1.04, $p = 0.64$)
Jenkins and Nickerson (2017)	299 adolescents, 12–14 years, USA	CS	**Victimization**: BPBQ, SR-Q **Attention**: BIB, SR-Q	Victims/defenders noticed bullying events in real life more often ($\beta_{victim} = 0.21$, $p = 0.023$; $\beta = 0.19$, $p = 0.025$), whereas bullies/assistants/outsiders did not (β's < 0.07, $p > 0.46$)
Rosen et al. (2007)	82 children, 9–13 years, USA	CS	**Victimization**: PPSS, SR-Q & PaR-Q (composite score) **Attention**: Emotional Stroop, Task	The more children were victimized, the faster their reaction times were to negative social words ($R^2 = 0.35$, $p < 0.01$; $\beta = -0.29$, $p < 0.01$)
Troop-Gordon et al. (2019)	72 children, 11.7 years, USA	CS	**Victimization**: MPVS-R, TR-Q, PEER, PaR-Q (composite score) **Attention**: Eye-tracking; time focused on bully roles, Task	Children paid most attention to the bully and then the victim (Attention to bully: $M = 5011.45$ ms, $SD = 912.76$, Attention to victim: $M = 4479.10$ ms, $SD = 694.90$, Attention to reinforcer: $M = 1547.92$ ms, $SD = 308.52$, Attention to defender: $M = 1490.81$ ms, $SD = 364.34$) Victimization did not significantly relate to attention (time spent) to any of the bullying roles ($r_{bully} = -0.04$, $r_{victim} = -0.04$, $r_{reinforcer} = 0.00$, $r_{defender} = -0.06$, p's > 0.05). Victims that paid more attention to bullies in the videos were more aggressive according to peers ($\beta_{overt} = 0.38$, $p < 0.001$; $\beta_{relational} = 0.43$, $p < 0.001$), but not according to teachers ($\beta_{teachers} = 0.20$, $p = 0.099$)

CS cross-sectional, *L* longitudinal, *SR-Q* self-report questionnaire, *PaR-Q* parent-reported questionnaire, *TR-Q* teacher-reported questionnaire, *PEER* = Peer nomination. See Table 7 for abbreviations of the questionnaires and tasks

all children spent most time looking at bullies and second most time looking at victims (Troop-Gordon et al., 2019). Thus, children focused attention mostly on the immediate threat, the bully, and not, for example, on bystanders who could possibly help. For victims, the attended social cues might affect behavior, as heightened attention for bullies by victimized children related to more aggressive behavior (Troop-Gordon et al., 2019). These findings provided indirect support for the role of threat prevention in attention to social cues in general.

A focus on threat not only became apparent in studies employing tasks with visual social cues, but also in a study examining interference of word valence on the ability to name the color of the word (emotional Stroop effect: Williams et al., 1996). Victimization experiences related to faster responses to victimization related words (Rosen et al., 2007). Faster responses to victimization related words indicate faster attendance to these social cues, which could imply that victims focus on threatening social cues. Alternatively, these results can also be interpreted in line with the *desensitization hypothesis*, from which it was expected that victims would attend less to social cues in general. Frequently victimized children may be more insensitive toward negative valence words, so that the valence of these words interferes less, resulting in faster reaction times. As such, whether this study provides more support for the *prevention* or the *desensitization hypothesis* remains unclear.

Taken together, the studies on attention and victimization suggest that victims may have a heightened focus on negative or threatening social cues, as two studies gave indirect support and one study out of four clearly indicated that victims might notice social threatening events more often. Across time, this focus on negative social cues may result in numbness for negative social information, but the conclusion regarding the *desensitization hypothesis* is tentative, as no study investigated prolonged (persistent) victimization. So far, studies have not examined heightened attention to positive information, which means that there is not enough evidence to assess the *reaffiliation hypothesis* properly. Although the (scarce) evidence so far seems most in line with the *prevention hypothesis*, it is possible that victims use different social-cognitive styles depending on the situation and that the situations invoking reaffiliation have been omitted. For instance, situations with unknown peers might invoke reaffiliation strategies, whereas situations with familiar peers might invoke prevention or desensitization strategies.

Accurate Registration

Accurate registration of social cues is crucial for effective social interactions. Inaccurate registration of important information can lead to less adequate responses, which can come across as odd, rendering one vulnerable for victimization. Below, the general accurate registration of social cues (6 studies) and emotion recognition (12 studies) are discussed separately.

Table 2 displays the research on accurate registration of social cues and emotion recognition. Some evidence for general accurate registration points toward the *desensitization hypothesis* (1 of 6 studies), which predicts that victims would focus less on social events in general, and therefore have lower accuracy in perceiving social cues, regardless of their valence. One of the five studies indicated that victimization related to a less accurate registration of social cues in general. Children who, according to their teachers, had more victimization experiences were less accurate in telling what they saw in a picture of a social situation (Ogelman & Seven, 2012).

Other research was in line with the *prevention hypothesis* (3 out of 6 studies), which predicts that victims would focus on negative social cues and therefore would register more cues as negative, leading to a lower registration accuracy of positive social cues. These studies showed that victims register cues with a negative bias. They underestimated the number of balls they received from other players in a digital ball tossing game (Cyberball) and overestimated the times they were excluded from the ball tossing interaction, regardless of being in- or excluded in the game (Lansu et al., 2017). Overestimation also occurred in rejection perceptions. Overt victimization, and not relational victimization, related to increased perceptions (overestimation) of peer rejection (Zimmer-Gembeck et al., 2013). Moreover, being victimized related to lower overestimation of one's own likeability (Garandeau & Lansu, 2019). These general tendencies pointed to a negative social-cognitive style, in line with the *prevention hypothesis*.

One study provided some support for the *reaffiliation hypothesis*, which predicts that victims, in pursuit of reaffiliation, would register ambiguous social cues more positively, leading to lower registration accuracy of negative social cues. In a study where children had to identify children as being part of their own or another team, victims tended to be better at recalling their own rather than opposite team members, when they had seen pictures of the others only once before (Telzer et al., 2020). By remembering team member's identities better, they may optimize social opportunities, as they have something (although minimal) in common. In a last study peer-reported victims were compared with bullies, followers, defenders, outsiders, and non-involved children. This study provided no support for any of the hypotheses, as victims did not differ from others in their ability to recall and retell vignettes of social provocation and ambiguous scenarios (Camodeca & Goossens, 2005). The differences between these studies might be because of the assessment of registration accuracy, as the type of task (e.g., recalling or describing) and the level of language skills needed to complete it, differed between the studies, possibly leading to diverse results.

In sum, results on accurate registration are limited and mixed, and much remains unknown, but there are first indications that victims differ in registration accuracy of social cues.

Emotions Emotion recognition is the ability to label facial expressions of others correctly. Twelve studies on accurate registration were found, of which two studies examined recognition of specific emotions, eight studies overall emotion recognition, and two studies both overall and specific emotion recognition. Most evidence indicated no significant relation between victimization and overall emotion recognition (8 out of 10 studies, of which 1 had mixed results depending on the task used), see Table 2. There was no evidence for tasks with basic emotion recognition that victimization among young children (4–6 years old) related significantly to overall emotion recognition: neither for matching emotional pictures (Heinze et al., 2015; Laurent et al., 2018) nor when choosing a facial picture of how a person in a story feels (Belacchi & Farina, 2010; Garner & Lemerise, 2007; Heinze et al., 2015; Laurent et al., 2018). These results contradict the *desensitization hypothesis*, which predicts that victims are worse overall in emotion recognition, because of desensitization to others' emotions. However, the results are also not in

Table 2 Study results on registration accuracy

Reference	Sample	Design	Measurements	Results
Baird et al. (2010)	14 girls, 13–15 years, USA	CS	**Victimization**: CSBS, SR-Q **Overall emotion recognition:** Respond to the picture (2.5 s) only if it shows a certain emotion, Task	Victimization was not related to emotion recognition, possibly due to the ceiling effect of performance on the task
Baroncelli & Ciucci (2014)	529 children, 10.5–15 years, ITA	CS	**Victimization**: CBQ, SR-Q; TBQ, SR-Q **Overall emotion recognition:** EIS-I, SR-Q	Both cyber- and traditional victimization were not related to self-reported recognition of others' emotions ($r_{cyber} = -0.02$, $r_{traditional} = -0.07$, $p > 0.05$)
Belacchi & Farina (2010)	219 children, 3–6 years, ITA	CS	**Victimization**: P8RQ, TR-Q **Overall emotion recognition:** TEC, Task	Victimization was not related to emotion recognition ($r_{teacherA} = -0.12$, $r_{teacherB} = 0.04$, $p > 0.05$)
Camodeca & Goossens (2005)	242 children, 9.8 years, NLD	CS	**Victimization:** PRS, PEER **Accurate registration:** Retell story, Task	Bully-roles were not related to the scores on retelling the stories ($M_{bullies} = 12.0$. $SE_{bullies} = 2.0$, $M_{followers} = 13.1$, $SE_{followers} = 1.9$, $M_{victims} = 13.2$, $SE_{victims} = 1.4$, $M_{defenders} = 13.7$, $SE_{defenders} = 1.4$, $M_{outsiders} = 12.9$, $SE_{outsiders} = 1.8$, $M_{not\ involved} = 13.2$, $SE_{not\ involved} = 2.0$)
Ciucci et al. (2014)	526 children, 11–15 years, ITA	CS	**Victimization**: CBQ, SR-Q; TBQ, SR-Q **Overall and specific emotion recognition:** DANVA-2, Task	Traditional victimization was not related to emotion recognition, as measured by overall emotion recognition accuracy ($\Delta R^2 = 0.00$), recognition of separate emotions ($\Delta R^2 = 0.02$), or mistaking one emotion consistently for another ($\Delta R^2 = 0.01$) Cyber victimization was related to lower global emotion recognition ($\Delta R^2 = 0.03$, $b = -0.44$, $p = 0.01$), separate emotion recognition ($\Delta R^2 = 0.03$; $b_{anger} = -0.54$, $p = 0.04$, $b_{fear} = -0.61$, $p = 0.02$), and fear systematically recognized as anger ($\Delta R^2 = 0.03$; $b_{anger\ bias} = 1.04$, $p = 0.001$, $b_{fear\ bias} = 0.91$, $p = 0.02$)
Garandeau & Lansu (2019)	Study 1: 1035 adolescents, 11–17 years, NLD	CS	**Victimization:** 1 Q, PEER **Accurate registration:** Difference scores calculated as self-perceived likeability minus peer-perceived likeability, SR-Q & PEER	The more adolescents were victimized, the less they over-estimated their own likeability ($\beta = -0.13$, $p < 0.001$)
Garner & Lemerise (2007)	94 children, 3–6 years, USA	CS	**Victimization**: PVM-TRF, TR-Q **Overall and specific emotion recognition:** GESK, Task	Relational victimization was not related to either accuracy of anger ($\beta = -0.10$, $p > 0.05$) or global emotions ($\beta = 0.16$, $p > 0.05$) recognition Physical victimization was negatively related to accuracy of anger ($\beta = -0.22$, $p < 0.05$) and positively to global emotions ($\beta = 0.27$, $p < 0.01$) recognition
Guy et al. (2017)	754 children, average 13.95 years, GBR	CS	**Victimization**: BFIS, SR-Q; Nominate up to three victims and perpetrators, PEER **Overall emotion recognition:** RMET, T	Victimization was unrelated to the ability to read emotions from sets of eyes ($F(1713) = 1.8$, $p = 0.29$, $\eta\rho^2 = 0.00$)
Heinze et al. (2015)	134 children, 5.0 years, USA	CS	**Victimization**: PPSS, SR-Q **Overall emotion recognition:** AKT, Task; EMT, Task; KAI, Task	Victimization was related to behavioral emotion knowledge ($\beta = -0.20$, $p < 0.05$), but not to emotional situation knowledge ($\beta = -0.21$, $p > 0.05$) and emotion recognition knowledge ($\beta = 0.02$, $p > 0.05$)
Hieh et al. (2019)	6,233 children, 9–10 years, TWN	CS	**Victimization**: 7 Q's victimization in the past year, SR-Q **Overall emotion recognition:** BEIS-10, SR-Q	Victimization was negatively associated with emotion recognition ($r = -0.12$, $p < 0.01$)

Table 2 (continued)

Reference	Sample	Design	Measurements	Results
Lansu et al. (2017)	564 children, 3rd–5th grade, average age 9.9 years, NLD	CS	**Victimization:** Who in your classroom has bullied you? SR-Q; Who in your classroom is bullied by others? PEER **Accurate registration:** Cyberball, How many balls did you receive? Task	Peer nominated victimization was not related to perceived exclusion during Cyberball (Exp(B) = 1.3, $p > 0.05$) or the number of balls reported ($\beta = 0.05$, $p > 0.05$), whereas conditions (in- & exclusion) did ($Exp(B)_{perceived\ exclusion} = 36.8$, $p < 0.05$; $\beta_{reported\ number\ of\ balls} = -0.59$, $p < 0.05$) Self-reported victimization was positively related to perceived exclusion ($Exp(B) = 39586.4$, $p < 0.05$) and lower amount of balls received ($\beta = -0.09$, $p < 0.05$) was not explained by condition (in- & exclusion) ($Exp(B)_{perceived\ exclusion} = 38.7$, $p < 0.05$; $\beta_{reported\ number\ of\ balls} = -0.58$, $p < 0.05$)
Laurent et al. (2018)	50 children, average age 4.5 years, CAN	CS	**Victimization:** HBQ-T, TR-Q **Overall emotion recognition:** AKT, Task	Victimization did not significantly relate to emotional situation knowledge ($r = -0.22$, $p > 0.05$) or emotion recognition ($r_{verbal\ emotion\ naming} = 0.07$, $p > 0.05$; $r_{pointing\ out\ emotions} = 0.06$, $p > 0.05$)
Miller et al. (2005)	134 children, kindergarten & 1st grade, USA	L: 2 waves over 6 months	**Victimization**: 3 Q's, SR-Q **Overall emotion recognition:** KAI, Task	Victimization in spring was related to emotion recognition ($\beta = -0.19$, $p < 0.05$), controlling for the effect of victimization in the fall ($\beta = 0.36$, $p < 0.05$)
Ogelman & Seven (2012)	60 children, 5.9–6.3 years, TUR	CS	**Victimization:** CBS, TR-Q **Accurate registration:** Hypothetical situation pictures, describe what you see, Task	Frequently victimized children described less accurately what they saw ($\beta = -0.30$, $p = 0.019$)
Pozzoli et al. (2017)	117 children, average age 12.4 years, grade 6th–8th, ITA	CS	**Victimization**: Nominate unlimited classmates who fit each of the 16 behaviors, PEER **Specific emotion recognition:** ERT, Task	Frequently victimized boys were worse at recognition of low intensity fear than less victimized boys (OR: 0.80, 95% CI: 0.67–0.94) and high intensity sadness (OR: 0.84, 95% CI: 0.72–0.97) Higher victimized girls were worse at recognizing intensities (low/high) of disgust (OR: 0.76/0.77, 95% CI 0.61–0.95/0.61–0.98), sadness (OR: 0.67/0.63, 95% CI 0.53–0.84/0.49–0.78), and high intensity surprise (OR: 0.68, 95% CI 0.55–0.85). They were better in recognizing low intensity happiness (OR: 1.62, 95% CI 1.11–2.45)
Rudolph et al. (2021)	43 girls, average 15.4 years, USA	CS	**Victimization:** SEQ-S, SR-Q **Specific emotion recognition:** LERT, Task **Threat interpretation:** CRSQ, SR-Q	Adolescent girls who were more often victimized, were less accurate in labeling negative emotions ($b(SE) = -0.03(0.01)$, $p < 0.05$), This effect was stronger in high rejection sensitive victims ($b(SE) = -0.04(0.02)$, $p < 0.01$), but not in low rejection sensitive victims ($b(SE) = 0.01(0.02)$, $p = 0.72$). Victimization in girls did not significantly predict labeling positive emotions ($b(SE) = -0.00(0.01)$, $p > 0.05$) and this association did not differ depending on the rejection sensitivity level ($b(SE) = -0.01(0.01)$, $p > 0.05$)
Telzer et al., (2020)	38 girls, 14–16 years, USA	L: 8 annual waves	**Victimization:** SEQ-S, SR-Q **Accurate registration:** MGT-m, Task	Victimization (over W1-7) was positively associated with recognition of teammates vs non-teammates, when these teammates and non-teammates were only seen once ($r = 0.37$, $p < 0.05$)
Zimmer-Gembeck et al. (2013)	359 children, 10–12 years, AUS	CS	**Victimization:** CSBS, PEER 7 Q's, SR-Q **Accurate registration:** Overestimation of rejection by peers (residuals of regression of perceived peer rejection on classmate-nominations of rejection)	Self-reported overt victimization related positively to overestimation of peer rejection ($\beta = 0.27$, $p < 0.01$) as well as rejection sensitivity ($\beta = 0.27$, $p < 0.01$), but not self-reported relational victimization ($\beta = 0.07$, $p > 0.05$)

CS cross-sectional, *L* longitudinal, *SR-Q* self-report questionnaire, *PaR-Q* parent-reported questionnaire, *TR-Q* teacher-reported questionnaire, *PEER* peer nomination. See Table 7 for abbreviations of the questionnaires and tasks

line with the *prevention* and *reaffiliation hypothesis*, which similarly predict worse overall emotion recognition: victims focusing more on negative social cues could be more open to register more expressions as negative (*prevention*) and vice versa, victims focusing more on positive social cues could be more open to register more expressions as positive (*reaffiliation*). However, the non-significant results might be due to the use of tasks that were too simple and thus unable to catch subtle differences between children or show ceiling effects. Indeed, the use of more complex measures provided different outcomes (study quality did not clearly differ between the simple and more complex tasks studies). Results on a more intricate task (labeling emotions of puppets giving visual and audio cues), indicated a positive relation between victimization and accurate labeling of emotions (Heinze et al., 2015). Additionally, physical victimization (but not relational) related to better overall emotion recognition (Garner & Lemerise, 2007). However, victimization was related to making more mistakes in labeling ten different emotions in pictures (Miller et al., 2005). Thus, the findings were mixed and also often based on relatively small sample sizes.

Among the studies on older children (10–15 years old), there were a few with larger sample sizes. The study with the largest sample size ($N = 6233$) provided evidence that victimization related negatively to self-reports of emotion recognition abilities (Hsieh et al., 2019), whereas the second study ($N = 757$) using a task (reading the mind in the eyes) did not (Guy et al., 2017). Both studies had higher quality levels in the quality assessment (9 and 11 points respectively). Furthermore, most other studies did not provide evidence that victimization related to overall emotion recognition (Baird et al., 2010; Baroncelli & Ciucci, 2014; Ciucci et al., 2014), except for cyber-victimization which related to lower general emotion recognition abilities (Ciucci et al., 2014). Overall, the relation between victimization and overall emotion recognition seems not significant.

Although overall differences in emotion recognition do not seem apparent, victims may have worse abilities in emotion recognition of specific emotions. For example, emotions like fear or sadness may be recognized as anger to prevent (possible) assault (*prevention hypothesis*), or contrarily, emotions such as contempt may be recognized as positive and social opportunities (*reaffiliation hypothesis*). Four articles examined separate emotions. One study focused on younger children (4–6 years old) and found that physical and not relational victimization, related to worse recognition of angry expressions (Garner & Lemerise, 2007). Another study on victimization type found that cyber-victimization related to making more mistakes on recognizing anger and fear (Ciucci et al., 2014), yet found no evidence for a relation with traditional victimization. A small study ($N = 43$ girls), found that female victims were less accurate in labeling negative emotions, especially if they were sensitive to rejection, but no significant effects were found for labeling positive emotions (Rudolph et al., 2021). There might be gender differences, as a last study found that boys' victimization related to making more errors on recognizing fear and sadness, whereas for girls, victimization related to errors on recognizing sadness, disgust, and surprise and to less mistakes on recognizing happiness (Pozzoli et al., 2017). These studies indicate that victims might have trouble recognizing negative rather than positive emotions.

In sum, findings on registration accuracy suggest that across different types of social cues there are indications that negative social cues might be registered less accurately, which would be in line with the *prevention hypothesis*. If true, such misrepresentations of negative social cues would set victims at a disadvantage for appropriate responding, possibly leading to misunderstanding by others and yielding them even more vulnerable for rejection or victimization. However, the conclusions are tentative because of the small number of studies examining registration of social cues and lack of longitudinal studies investigating these links.

Interpretation of Social Information

After the selection and registration of social cues, the next step in the SIP model is the interpretation of social cues. Interpretation comprises assigning meaning to the (combination of) registered cues. For example, when you attend to and accurately register a face as happy, interpretation involves attributing a reason to why this person is smiling given the other social cues in that situation. The topics related to interpretation in the selected articles involve attribution of situations, peer perception, and the ability to understand others, which includes empathy and theory of mind (ToM).

Attribution of Situations

Attribution of situations was a popular topic in research on social cognition of victims (49 studies). Examples were interpretation of others' intentions and expectations of what would happen. Most evidence favored the *prevention hypothesis,* which predicts that victims have more negative interpretations of social cues because of their focus on threatening information (33 studies, of which two found it only for a specific victimization type and one only for a certain nationality), see Table 3. With respect to attributions about bullying, victimization related to thinking that bullying is a serious problem at one's school (Choi & Park, 2018), interpreting ambiguous scenarios more often as bullying (Calleja & Rapee, 2020) and thinking they were being bullied more often because of their personality instead of their behavior (Morrow et al., 2019), but not to a more negative attitude toward the concept of bullying (Caravita et al., 2019; Pouwels et al., 2017).

Other research, on non-bullying situations, found that victimization related to expecting threat (Balan et al., 2018; González-Díez et al., 2017; Hunter et al., 2010; Röder & Müller, 2020), being rejection sensitive (Ding et al., 2020; Rowe et al., 2015; Zimmer-Gembeck, 2015; Zimmer-Gembeck & Duffy, 2014; Zimmer-Gembeck et al., 2013, 2014), worrying about negative evaluations (Estévez et al., 2019; Giannotta et al., 2012; Gómez-Ortiz et al., 2018; Taylor et al., 2013; Zimmer-Gembeck & Duffy, 2014), feeling rejected when receiving few likes in a social media task (Lee et al., 2020), and being more sensitive to aversive stimuli (Rudolph et al., 2016). Moreover, a longitudinal study found that adolescents with victimization experiences adopted rejection schemas more often. These maladaptive schemas, in turn, predicted later victimization (Calvete et al., 2018). Not only perceived threats of rejection, but also of hostility have been examined. Victimization experiences related to hostile intent attributions in ambiguous situations (Camodeca & Goossens, 2005; Camodeca et al., 2003; Guy et al., 2017; Hoglund & Leadbeater, 2007; Hung et al., 2017; Kokkinos & Voulgaridou, 2018; Ogelman & Seven, 2012; Perren et al., 2013; Pornari & Wood, 2010; Schwartz et al., 1998; Yeung & Leadbeater, 2007), as well as in provocative situations (Ziv et al., 2013). In other words, children with more victimization experiences seemed to interpret situations more often as threatening, consistent with the *prevention hypothesis*. In more positive situations, victims did not interpret more hostile intent (Smorti & Ciucci, 2000). Thus, the situation (positive, ambiguous, or negative) might influence the adopted social-cognitive style.

Findings from three other studies painted a more complex picture. The specific bully-role might be important, as one study indicated that only bully-victims, but not pure victims, interpreted video fragments of ambiguous social interactions (abstract figures, animals, and humans) more often as bullying compared to non-involved children. Additionally, bully-victims interpreted even positive interactions of apes in a zoo more often as bullying compared to non-involved children (Pouwels 2016). A second study found that only relational victimization, and not physical victimization, related to interpreting situations as more negative and social threatening (Calleja & Rapee, 2020).

However, there were several contradictory findings (14 studies). First, some studies did not find significant associations between victimization and hostile interpretation tendencies (Leff et al., 2014; Mathieson et al., 2011; Prinstein et al., 2005; Smalley & Banerjee, 2014; Smorti & Ciucci, 2000; van Dijk et al., 2017; Warden & Mackinnon, 2003) or being more upset after hypothetical, ambiguous provocations (McQuade et al., 2019), or only found evidence of this association for Japanese but not for American children (Kawabata et al., 2013). Other studies found no association between victimization and fearing negative evaluation (Kiekens et al., 2020; Pabian, 2019) or expecting and interpreting rejection (Rudolph et al., 2021; Stubbs-Richardson & May, 2020). In addition, one study found no evidence that victims interpret situations more often as emergencies when they were also asked whether they would intervene that particular situation (Jenkins & Nickerson, 2017). Notably, the average study quality of these studies ($M = 7.21$ points, $SD = 1.42$) is lower than the study quality of all studies on situation attribution ($M = 8.69$, $SD = 2.02$), slightly suggesting that the results that were more common and in line with the prevention hypothesis might be more valid.

With regards to the *reaffiliation hypothesis*, in the seven studies that examined positive attributions separately from negative attributions, no evidence was found that victims interpret situations more positively or attribute less hostile intent (Garner & Lemerise, 2007; Hung et al., 2017; Smorti & Ciucci, 2000; Warden & Mackinnon, 2003), nor that victims perceive more social opportunities amid school transitions (Röder & Müller, 2020), nor judge bullying conceptually right (Caravita et al., 2019). Victims might even interpret intentions less positive compared with non-involved children (Camodeca et al., 2003; Ziv et al., 2013).

In sum, strongest evidence was found in line with the *prevention hypothesis* (33 out of 49 studies): victims interpreted situations and intentions of others more negatively, hostile, or dangerous, and were more sensitive to rejection. Moreover, this negative attribution style seems to include both more negative *and* less positive interpretations.

Peer Perception

There were many studies that examined how victims generally perceived their peers, see Table 4 (35 studies). In line with the *prevention hypothesis*, most research (26 studies, of which three with partial support) indicated that victimization related to negative peer perception (Hong et al., 2019, 2021; Ladd & Troop-Gordon, 2003; Purcell et al., 2021; Rudolph et al., 2009; Sainio et al., 2013; Salmivalli & Isaacs, 2005; Schacter & Juvonen, 2018; Troop-Gordon & Ladd, 2005), less trust in peers (Betts et al., 2017), negative expectations of peer interactions (Audley et al., 2020), and negative perceptions of the social climate and interpersonal relationships (Barzeva et al., 2020; Berg & Aber, 2015; Elsaesser et al., 2013; Gini, 2008; Harks & Hannover, 2020; Holfeld & Baitz, 2020; Lázaro-Visa et al., 2019; Leadbeater et al., 2015; Mertens et al., 2021; Moyano et al., 2019). Some longitudinal studies also provided evidence in this direction: Increased victimization led to increases in negative peer perception (Elsaesser et al., 2013; Troop-Gordon & Ladd, 2005), and negative peer perception predicted subsequent victimization for girls (Sainio et al., 2013). However, cybervictimization did not explain negative peer perception over and above traditional victimization (DePaolis & Williford,

2019). In addition, a second study also did not find a concurrent relation between victimization and peer connectedness perceptions (Aldridge et al., 2020).

Several studies indicated that it is important to examine to which peers the perception refers. Victims attributed less favorable characteristics to non-friends than they did to friends (van Noorden et al., 2014), even more strongly than non-involved peers (van Noorden et al., 2016). This might be partially based on sympathy, as victims judged non-involved peers more positively than they judged bullies and bully-victims (van Noorden et al., 2016), again in line with the *prevention hypothesis.* Though victims themselves might think less of bullies, they do not necessarily think that others have similar thoughts. Being victimized was not related to thinking that hypothetical victims and classmates would dislike a hypothetical bully (Garandeau & Lansu, 2019). However, victims themselves judged known bullies and followers more positively than unknown bullies and followers (*reaffiliation hypothesis*), whereas known defenders are judged less positively than unknown defenders (*prevention hypothesis*) (Pouwels et al., 2017). Possibly, judgements occur in reference to standards that are hold for specific peers.

Additionally, two studies indicated that the general peer perception of victims might be rigid. They found that victimization related positively to holding an entity rather than an incremental perspective on peer relationships (Rudolph, 2010) and on peers' personalities (Kaufman et al., 2020). In other words, victims seem to think that peers and relationships are set and cannot change. As victims also hold more negative perceptions of peers, it is likely that such rigid perceptions might influence how they engage in future interactions with peers.

Three studies compared victimization types. Cyber-victims were less positive about peers than non-involved peers, but cyber-bully-victims were not (Guo et al., 2021). This finding was corroborated by Ding et al. (2020)), who found no differences on perceived social climate for non-involved, traditional bully-victims and cyber-bully-victims. A last study found that bully-victims, but not pure victims, perceived their school social climate less positive than non-involved children, whereas both victims and bully-victims perceived their peers less positive compared with bullies and non-involved peers (Bayar & Uçanok, 2012).

Only one study was fully consistent with the *reaffiliation hypothesis*, and found that victimization related to believing that others keep secrets and keep promises (Rotenberg & Boulton, 2013), contrasting the study of Betts and colleagues (2017). Although trust is usually a strength in social interactions, trust might lead to more opportunities to being bullied, for example when a victim tells others their secrets. These opportunities might be especially utilized if there is a motive, such as being perceived as untrustworthy (which was how others perceived victims, Rotenberg & Boulton, 2013). Contrasting the *reaffiliation hypothesis*, it seems unlikely that victims more readily like peers for superficial reasons, because participants did not like previously unknown teammates better than non-teammates (Telzer et al., 2020).

One study seemed in line with the *desensitization hypothesis,* as persistent victimization did not relate to peer perception (Ladd & Troop-Gordon, 2003). A finding that did not fit any of the hypotheses was that victimization, especially for girls, related to thinking one's friends are susceptible to peer influence (Goldstein et al., 2020). Speculatively, this perception might relate to negative peer experiences where friends do not stand up for victimized youth and join in on negative behaviors of others in the peer group.

In conclusion, victims adopt more negative views of both their peers and relationships in general (26 studies in favor, 5 studies with nonsignificant results), though this tendency is less pronounced for friends and defenders. In addition, victims possibly think that peers cannot change (2 studies).

Understanding others

For successful interpretation, the ability to understand others is crucial. An important aspect is empathy, the ability to experience (affective empathy) and understand (cognitive empathy) feelings of others (Decety et al., 2012; Mehrabian & Epstein, 1972). Related to cognitive empathy is theory of mind (ToM). ToM involves the technical ability to ascribe mental states to others, such as feelings, intentions and thoughts, and specifically the understanding that people can have different information available and thus differ in mental states (Astington, 2001). Although victims might be trying hard to understand others (to anticipate social opportunities or threats), based on the *reaffiliation* and the *prevention hypothesis*, they actually might have less abilities to experience and understand emotions and (mental) states of others. Furthermore, based on the *desensitization hypothesis*, persistent victimization might lead to an even lower ability to experience and understand emotions and (mental) states of others, because of desensitization. Even more, it was expected that these victims would have a deficit in the ability to understand the mental states of others, as similar to rejected peers, they might have had fewer social opportunities to develop these abilities (Banerjee et al., 2011).

Empathy In contrast with all three hypotheses, *reaffiliation, prevention* and *desensitization*, Table 5 reveals that most studies (29 out of 44, of which 8 studies found some significant results for either affective, cognitive or general empathy) provide no evidence for an association between victimization and empathy (e.g., Berg & Aber, 2015, see Online Source 3 for the 29 references). Moreover, a longitudinal study found no effect of within-person changes in empathy

Table 3 Study results on attribution of situations

Reference	Sample	Design	Measurements	Results
Balan et al. (2018)	476 adolescents, split in two samples (N_{S1} = 226, N_{S2} = 250), 10–17 years, ROU	CS	**Victimization:** APRI, SR-Q **Threat interpretation:** CATS-N/P, SR-Q	In both samples, the more victimized adolescents were, the more negative automatic thoughts they had (r_{S1} = 0.48, p < 0.01; r_{S2} = 0.47, p < 0.01), as measured through physical threat (r_{S1} = 0.46, p < 0.01; r_{S2} = 0.31, p < 0.01) and social threat (r_{S1} = 0.51, p < 0.01; r_{S2} = 0.47, p < 0.01) In a mediational path model automatic thoughts were directly related to bullying victimization (β_{S1} = 0.19, p < 0.001; β_{S2} = 0.22, p < 0.01). In a second mediational path model this effect was significant for both social threat thoughts (β_{S1} = 0.41, p < 0.01; β_{S2} = 0.55, p < 0.01) and hostility (β_{S1} = 0.41, p < 0.01; β_{S2} = 0.34, p < 0.01)
Calleja & Rapee (2020)	267 girls, 12–15 years, AUS	CS	**Victimization:** PECK, SR-Q **Threat interpretation:** 10 vignettes with socially ambiguous situations, SR-Q	Victimization associated positively with interpreting ambiguous scenarios more often as being bullied ($r_{relational}$ = 0.30, p < 0.001; $r_{physical}$ = 0.24, p < 0.001). Only relational victimization related significantly to interpreting situations negatively (r = 0.29, p < 0.001), and physical victimization did not (r = 0.11, p = 0.075) Relational victimization, accounting for anxiety and depression, related positively to social threat sensitivity (β = 0.12, p = 0.044), whereas physical victimization did not (β = 0.03, p = 0.589)
Calvete et al. (2018)	1328 children, average 15.05 years, ESP	L: 3 waves over 1.5 years	**Victimization:** PRQ, SR-Q **Threat interpretation:** YSQ-3, SR-Q	Children with higher levels of victimization were more likely to adopt rejection schemas (β = 0.10, p < 0.05) and subsequently to be victimized (β = 0.08, p < 0.01)
Camodeca & Goossens (2005)	242 children, average 9.75 years, 5th–6th grade, NLD	CS	**Victimization:** PRS, PEER **Intent attribution:** 4 ambiguous scenarios, SR-Q	Victims and bullies attributed more hostile intent to the perpetrator than others (M(SE)$_{victim}$ = 19.3(7.5), $M(SE)_{bully}$ = 19.1(9.5), $M(SE)_{follower}$ = 15.2(8.6), $M(SE)_{defender}$ = 14.7(8.0), $M(SE)_{outsider}$ = 15.7(7.1), $M(SE)_{non\text{-}involved}$ = 13.8(7.1), p < 0.01)
Camodeca et al. (2003)	236 children (T1), 242 children (T2), 7.58–8.75 years, NLD	L: 2 waves over 1 year	**Victimization**: AVS, PEER **Intent attribution:** Ambiguous and provocative scenarios, SR-Q	Victims responded less assertive to provocative scenarios than non-involved children (p < 0.001, $M(SE)_{bully}$ = 1.43(1.34), $M(SE)_{victim}$ = 1.85(1.79), $M(SE)_{bully\text{-}victim}$ = 3.06(2.24), $M(SE)_{non\text{-}involved}$ = 3.16(2.28)), whereas bully-victims blamed perpetrators in ambiguous scenarios more often than bullies and non-involved children (M(SE) $_{bully}$ = 10.76(3.38), $M(SE)_{victim}$ = 10.92 (3.82), $M(SE)_{bully\text{-}victim}$ = 14.83(5.49), $M(SE)_{non\text{-}involved}$ = 9.91(3.35)), and were angrier (M(SE)$_{bully}$ = 12.88(4.34), $M(SE)_{victim}$ = 13.42(3.65), $M(SE)_{bully\text{-}victim}$ = 16.17(4.45), $M(SE)_{non\text{-}involved}$ = 11.64(3.60)) and wanted more retaliation than non-involved children (p < 0.05, $M(SE)_{bully}$ = 8.71(4.52), $M(SE)_{victim}$ = 8.75(5.01), $M(SE)_{bully\text{-}victim}$ = 11.50(5.54), $M(SE)_{non\text{-}involved}$ = 7.08(3.55))
Caravita et al. (2019)	634 children (315 immigrants), grades 4–8, ITA	CS	**Victimization:** PRQ, PEER **Situation attribution:** 1Q whether the vignette bully was right/wrong, SR-Q	Both non-immigrants and immigrants who were victimized according to classmates were not judging bullying more often as wrong or right (r's between − 0.05 and 0.05, p's > 0.05)
Choi & Park (2018)	3,660 adolescents, 7th–8th grade, KOR	L: 2 waves over 1 year	**Victimization:** BVQ, SR-Q **Threat interpretation:** 1Q on how serious bullying is at their school answered on 5-point likert, SR-Q	Thinking bullying is a serious issue in school related to being more often victimized concurrently ($r_{7th\ grade}$ = 0.30, p < 0.001) or one year later ($r_{8th\ grade}$ = 0.22, p < 0.001). Perceiving bullying as a serious issue in school during 7th grade related in a SEM analysis to being victimized in 8th grade (β = 0.06, p < 0.001), controlling for the effects of bullying (β = − 0.07, p < 0.05) and being bullied (β = 0.58, p < 0.001) in 7th grade

Table 3 (continued)

Reference	Sample	Design	Measurements	Results
Ding et al. (2020)	654 adolescents, 8–14 years, CHN	CS	**Victimization:** RCP-C, PEER **Threat interpretation:** CRSQ, SR-Q	Anticipated angry feelings ($\beta = 0.14$, $p < 0.01$) and the expectation of being rejected in ambiguous rejection scenarios related significantly to being victimized ($\beta = 0.09$, $p < 0.05$), whereas anticipated anxious feelings did not ($\beta = 0.02$, $p > 0.05$), whereas)
Estévez et al. (2019)	1,318 adolescents, 11–18 years, ESP	CS	**Victimization:** VSC, SR-Q **Threat interpretation:** SAS-A, SR-Q	Adolescents who were more often traditionally or cyber-victimized, also were more afraid of negative evaluation ($OR_{traditional} = 4.09$, $p < 0.01$; $OR_{cyber} = 3.87$, $p < 0.01$)
Garner and Lemerise (2007)	94 children, 3.42–6 years, USA	CS	**Victimization**: PVM-TRF, TR-Q **Intent attribution:** Ambiguous scenarios (4), SR-Q	Relational victimization did not significantly relate to attributing positive intentions ($\beta = -0.10$, $p > 0.05$) nor sorrow ($\beta = -0.04$, $p > 0.05$) to the perpetrator in ambiguous scenarios. Physical victimization significantly relate to attributing positive intent ($\beta = -0.16$, $p > 0.05$), but did relate to attributing sorrow toward perpetrators ($\beta = 0.22$, $p < 0.05$)
Giannotta et al. (2012)	155 children, 12–13 years, ITA	CS	**Victimization**: SEQ, SR-Q **Threat interpretation:** TANES, SR-Q	Relational victimization related positively to worrying about losing relationships ($r = 0.39$, $p < 0.01$) and having negative evaluations of others ($r = 0.39$, $p < 0.01$)
Gómez-Ortiz et al. (2018)	2060 adolescents, 12–19 years, ESP	CS	**Victimization:** EBIPQ, SR-Q ECIPQ, SR-Q **Threat interpretation:** FNE SAS-A, SR-Q	Victimization related positively to being afraid of negative evaluation by others ($r = 0.36$, $p < 0.05$)
González-Díez et al. (2017)	550 children, 16–19 years, ESP	L: 3 waves over 1 year	**Victimization**: PRQ, SR-Q **Threat interpretation**: LMSQ, SR-Q	Victimization related positively to perceiving threats as rapidly escalating and coming closer (r's = 0.11 and.12, $p < 0.05$). This relation disappeared when parents' emotional abuse was taken into account
Guy et al. (2017)	754 children, 11–16 years, GBR	CS	**Victimization:** BFIS, SR-Q, Nomination Q, PEER **Intent attribution:** Ambiguous social situation photos, SR-Q	Victims more often attributed hostile intentions to the perpetrator than did non-victims ($F(1713) = 5.01$, $p = 0.026$, $\eta\rho^2 = 0.007$, $M_{victim} = 2.38$, CI 2.22, 2.54, $M_{non\text{-}victim} = 2.11$, CI 1.93, 2.29)
Hoglund & Leadbeater (2007)	337 children, 11.5–13.9 years, CAN	CS	**Victimization:** SEQ, SR-Q **Intent attribution:** IAM, SR-Q	Relational victims made more hostile instrumental/relational attributions ($\beta_{boys} = 0.28/0.24$, $p < 0.01$; $\beta_{girls} = 0.23/0.26$, $p < 0.01$), whereas physical victims did not ($\beta_{boys} = 0.02/0.01$, $p > 0.05$; $\beta_{girls} = 0.02/0.02$, $p > 0.05$)
Hung et al. (2017)	130 children, 58 with traumatic brain injury, 72 with orthopedic impairment, 10–14 years, USA	CS	**Victimization:** SVS, SR-Q, PaR-Q **Intent attribution:** SIP-SRS, SR-Q	Victimization was positively correlated with an aggressive attribution style ($r = 0.22$, $p < 0.05$), but not with an assertive attribution style ($r = -0.12$, $p > 0.05$)
Hunter et al. (2010)	473 children, 9–12 years, GBR	CS	**Victimization:** 8 Q's, SR-Q **Threat interpretation:** Threat appraisal Q's, SR-Q	Victimization was positively related to anticipated higher levels of threat ($r_{non\text{-}discriminatory\ victimization} = 0.37$, $p < 0.001$ and $\beta = 0.33$, $p < 0.001$; $r_{discriminatory} = 0.28$, $p < 0.05$)
Jenkins & Nickerson (2017)	299 children, 12–14 years, USA	CS	**Victimization:** BPBQ, SR-Q **Threat interpretation:** BIB, SR-Q	Victims did not interpret bullying situations more often as emergencies ($\beta_{victim} = -0.14$, $p = 0.127$). There was an interaction with gender ($\beta = 0.20$, $p = 0.021$). For girls, victimization was negatively related to interpreting events as an emergency, whereas for boys it was positively related

Table 3 (continued)

Reference	Sample	Design	Measurements	Results
Kawabata et al. (2013)	272 children, 84 USA, 192 JPN, 9–10 years	CS	**Victimization:** SEQ, SR-Q **Intent attribution:** IAM, SR-Q	Victimization related positively to attributing hostile intent in ambiguous scenarios ($\beta_{\text{physical victimization}} = 0.20$, $p < 0.01$; $\beta_{\text{relational victimization}} = 0.35$, $p < 0.001$). Relational victimization only played a role for Japanese children ($\beta_{\text{Japanese}} = 0.47$, $p < 0.001$; $\beta_{\text{USA}} = 0.03$, $p > 0.05$)
Kiekens et al. (2020)	2,230 adolescents (W1), average 11.1 years, NLD W2: $N = 2{,}149$, $M_{age} = 13.6$ W3: $N = 1816$, $M_{age} = 16.3$ W4: $N = 1881$, $M_{age} = 19.1$ W5: $N = 1778$, $M_{age} = 22.3$	L: 5 waves	**Victimization (W1-3):** YSR, SR-Q **Threat interpretation (W4):** FNSES, SR-Q	The highest score on victimization over W1-3 was not significantly related to being more afraid of negative evaluation ($r = 0.06$, $p > 0.05$)
Kokkinos & Voulgaridou (2018)	228 children, 10–12 years, GRC	CS	**Victimization:** BVS, SR-Q **Intent attribution:** IAM, SR-Q	Victimization related positively to attributing hostile intentions ($\beta = 0.07$, $p < 0.001$)
Lee et al. (2020)	Study 3: 503 adolescents, average 15.3 years, USA	CS	**Victimization:** PES, SR-Q **Threat interpretation:** Social Media Task, Task; OO, SR-Q	Victimization related positively to post-task feelings of rejection ($\beta = 0.15$, $p = 0.005$). When victims (moderate to high levels) were in the few likes condition they had more feelings of rejection ($\beta = 0.48$, $p = 0.002$) than non-victims ($\beta = 0.18$, $p = 0.002$)
Leff et al. (2014)	109 children, 9–15 years, USA	CS	**Victimization:** CSBS, PaR-Q **Intent attribution:** HAB, SR-Q	Relational and overtly victimized children did not significantly relate to hostile attributions (r's between − 0.03 and − 0.16, p's > 0.05)
Mathieson et al. (2011)	635 children, 3rd–5th grade, USA	CS	**Victimization:** SEQ, TR-Q, PEER **Intent attribution:** IAM, SR-Q	Relational victimization did not significantly relate to attributing hostile attributions ($r = -0.02$, $p > 0.05$)
McQuade et al. (2019)	125 adolescents, 10–12 years, USA	CS	**Victimization:** CESQ-TR, TR-Q **Intent attribution:** IAM, SR-Q	Relational victimization did not relate significantly to being upset or mad after ambiguous relational provocations ($r = 0.12$, $p > 0.05$)
Morrow et al. (2019)	532 children, grades 4–5, average age 10 years, USA	CS	**Victimization:** PPSS, PEER **Intent attribution:** modified PSAQ, SR-Q	Victimization did not relate significantly to interpreting rejection and harassment of others in vignettes due to their own behavior ($\beta = 0.01$, $p > 0.05$), whereas it did relate significantly to interpreting it being due to their own character ($\beta = 0.72$, $p < 0.001$). Classroom level peer victimization did not significantly explain the level of characterological self-blame for being excluded or harassed ($\beta = 0.16$, $p = 0.52$)
Ogelman & Seven (2012)	60 children, 5.9–6.33 years, TUR	CS	**Victimization:** VS, TR-Q **Intent attribution:** Pictures of hypothetical situations, SR-Q	Victims attributed more hostile intentions to others ($\beta = -0.31$, $p = 0.015$)
Pabian (2019)	234 adolescents, 10–17 years, BEL	L: 2 waves over 6 months	**Victimization:** Definition and examples, 1 Q on cyberbullying frequency (past 6 months), SR-Q **Threat interpretation:** FNE SAS-A, SR-Q	A cross-lagged panel model showed that there were no significant cross-lagged paths between FNE and cyber-victimization

Table 3 (continued)

Reference	Sample	Design	Measurements	Results
Perren et al. (2013)	478 children, average 10.6 years in 5th grade, USA	L: 3 waves over 2 years	**Victimization:** Nomination Q, PEER **Intent attribution:** 4 ambiguous hypothetical scenarios, SR-Q	Victimization related positively to attributing hostile intent to others (path analysis: $\beta = 0.19$, $p < 0.001$)
Pornari & Wood (2010)	334 (325 for cyber analyses) children, average 13.3 years, grade 7–9, GBR	CS	**Victimization:** 13 Q's on cyber- and traditional victimization, SR-Q **Intent attribution:** HIT, SR-Q	Both traditional and cyber victims attributed more hostile intent to others ($\beta_{traditional} = 0.43$, $p < 0.001$; $\beta_{cyber} = 0.12$, $p < 0.05$)
Pouwels et al. (2016)	390 children, average 10.3 years, NLD	CS	**Victimization:** BVQ, SR-Q **Threat interpretation:** Videos of humans/apes/ abstract figures with positive/ negative/ambiguous valence, SR-Q	Bully-victims interpreted ambiguous fragments (apes, humans, & abstract) more as bullying than victims and non-involved ($M_{bullies} = 59.16$, $M_{victims} = 52.78$, $M_{bully\text{-}victims} = 67.84$, $M_{non\text{-}involved} = 56.23$, $p = 0.005$). Bully-victims interpreted positive ape fragments more as bullying than victims and non-involved ($M_{bullies} = 45.98$, $M_{victims} = 38.93$, $M_{bully\text{-}victims} = 61.16$, $M_{non\text{-}involved} = 43.96$, $p = 0.027$)
Prinstein et al. (2005)	Study 1: 116 children, 5–6 years, USA Study 2: 159 children, 15–17 years, USA	Study 1: CS Study 2: L: 2 wave over 17 months	**Victimization study 1:** 4 Q's, SR-Q **Study 2:** 1 Q, PEER **Intent attribution:** 4 ambiguous scenarios, SR-Q	Victimization did not significantly relate to attributing hostile intentions to others ($\beta_{S1\text{-}PR} = 0.17$, $p = 0.06$, $\beta_{S1\text{-}SR} = 0.06$, $p > 0.05$; $\beta_{S2\text{-}PR} = 0.06$, $p > 0.05$)
Röder & Müller (2020)	144 children, average 9.7 years, DEU	CS	**Victimization:** BVF, SR-Q **Threat interpretation:** ITCT, SR-Q	Victimization related significantly to perceiving social threat ($r_{direct\ victimization} = 0.25$, $p < 0.01$; $r_{indirect\ victimization} = 0.30$, $p < 0.01$), but not to perceiving social opportunities during school transitions ($r_{direct} = 0.07$, $p > 0.10$; $r_{indirect} = 0.10$, $p > 0.10$)
Rowe et al. (2015)	601 children, 9–13 years, AUS	L: 2 waves over 14 months	**Victimization:** CSBS, SR-Q **Threat interpretation:** CRSQ, SR-Q	Relational victimization was both concurrently ($r = 0.23$, $p < 0.01$) and subsequently positively related to rejection sensitivity ($r = 0.35$, $p < 0.01$)
Rudolph et al. (2016)	47 girls, 24 persistently victimized & 23 non-victimized, average 15.4 years, USA	L: 8 waves over 8 years	**Victimization:** SEQ-S, SR-Q **Threat interpretation:** BIS, SR-Q	Persistently victimized girls were more sensitive to aversive stimuli than non-victimized girls ($t(45) = 3.19$, $p < 0.01$, $d = 0.95$)
Rudolph et al. (2021)	43 girls, average 15.4 years, USA	CS	**Victimization:** SEQ-S, SR-Q **Threat interpretation:** CRSQ, SR-Q	Victimization in girls did not significantly relate to interpreting ambiguous scenarios as rejection ($r = 0.21$, $p > 0.05$)
Schwartz et al. (1998)	66 boys in 11 play groups, average 8 years, USA	CS	**Victimization:** Observed victimization in 45-min free play sessions **Intent attribution:** 6 ambiguous scenarios on play-group mates, SR-Q	Victimization was related to attributing hostile intent to their playgroup mates ($r = 0.26$, $p < 0.05$)
Smalley and Banerjee (2014)	181 children, 7.58–10.58 years, N/A	CS	**Victimization:** 16 Q's, PEER **Intent attribution:** 4 ambiguous and 4 hostile scenarios, SR-Q	Both relational and physical victimization did not significantly relate to attributing hostile intent in hostile or ambiguous scenarios (β's between 0.05 and 0.17, p's > 0.05)

Table 3 (continued)

Reference	Sample	Design	Measurements	Results
Smorti & Ciucci (2000)	207 children (64 bullies, 42 victims, 101 control), 11–13 years, ITA	CS	**Victimization:** BRSQ, SR-Q **Intent attribution:** 6 stories with two phases (regressive or progressive). Indicate the reaction of the protagonist and what happened	In regressive stories victims expected the protagonist to respond less aggressive than bullies did ($p < 0.01$, M_{rank} bullies: 117.7, victims: 86.6, non-involved: 103.1), but not in expected prosocial ($p > 0.05$, M_{rank} bullies: 105.8, victims: 102.2, non-involved: 103.6) and neutral stories ($p > 0.05$, M_{rank} bullies: 98.5, victims: 114.9, non-involved: 102.5). In progressive stories victims did not differ on expected reactions (aggressive, neutral or prosocial: p's > 0.05)
Stubbs-Richardson & May (2020)	369 adolescents, 14–19 years, USA	CS	**Victimization:** 4 Q's (physical, verbal, relational, cyber), SR-Q **Threat interpretation:** JJSAS, SR-Q	Victimization (binary score) did not significantly relate to experiences and expectations of rejections ($b(SE)_{phsyical} = -0.02(0.03)$, $p = 0.517$; $b(SE)_{verbal} = 0.05$ (0.03), $p = 0.124$; $b(SE)_{relational} = 0.05(0.03)$, $p = 0.076$; $b(SE)_{cyber} = 0.01(0.03)$, $p = 0.815$)
Taylor et al. (2013)	326 children, 10–16 years, USA	L: 3 waves over 1 year	**Victimization W1:** PBFS, SR-Q **Threat interpretation W2:** TANES, SR-Q	Relational victimization related positively to being concerned with negative evaluations by others ($\beta = 0.20$, $p < 0.01$). Physical victimization did not significantly relate to being concerned with negative evaluations of others ($\beta = -0.08$, $p > 0.05$)
Van Dijk et al. (2017)	143 children, 4–9 years, NLD	CS	**Victimization:** PABI, PEER **Intent attribution:** 4 ambiguous scenarios	Victimization did not significantly relate attributing hostile intentions ($r = -0.09$, $p > 0.05$)
Warden & Mackinnon (2003)	58 children, 9–10 years, GB-SCT	CS	**Victimization:** 1 Q, PEER **Threat interpretation:** SSA, SR-Q	Victims did not differ from bullies or prosocial children in possible positive or negative outcomes they could think of. Prosocial children thought of more negative outcomes than bullies (Scheffe test total neg $p = 0.058$, Scheffe test short-term neg $p = 0.016$)
Yeung & Leadbeater (2007)	140 children, 9–11 years, CAN	L: 2 waves over 5 months	**Victimization:** SEQ, SR-Q **Intent attribution:** IAM, SR-Q	Relational and physical victimization related positively to hostile intent attribution concurrently (r's 0.25–0.34, p's < 0.05) and subsequently (r's 0.19 and 0.24, p's < 0.05). Hostile intent attribution related positively to subsequent relational victimization only ($r_{physical} = 0.13$, $p > 0.05$, $r_{relational} = 0.19$, $p = 0.05$)
Zimmer-Gembeck (2015)	711 children, 9–13 years, AUS	L: 3 waves over 14 months	**Victimization:** CSBS, SR-Q **Threat interpretation:** CRSQ, SR-Q	Victimization related both concurrently and subsequently to rejection sensitivity ($r_{concurrent} = 0.32$, $p < 0.01$, $r_{14\ months\ later} = 0.21$, $p < 0.01$)
Zimmer-Gembeck & Duffy (2014)	358 children, 9–13 years, AUS	L: 2 waves over 8 months	**Victimization:** CPRS, PEER **Threat interpretation:** CRSQ, SR-Q FNE SASC, SR-Q	Victimization related significantly to rejection sensitivity ($r = 0.22$, $p < 0.01$) and being afraid of negative responses by others ($r_{concurrent} = 0.30$, $p < 0.01$, $r_{8\ months\ later} = 0.24$, $p < 0.01$)
Zimmer-Gembeck et al. (2013)	359 children, 10–12 years, AUS	CS	**Victimization:** CSBS, PEER; 7 Q's, SR-Q **Threat interpretation:** CRSQ, SR-Q	Victimization related positively to rejection sensitivity (SR: $r_{overt\ victimization} = 0.22$; $p < 0.01$, $r_{relational\ victimization} = 0.30$, $p < 0.01$; PR: $r_{relational} = 0.22$, $p < 0.01$; No PR overt victimization measure)
Zimmer-Gembeck et al. (2014)	601 children, 9–13 years, AUS	CS	**Victimization:** CSBS, SR-Q **Threat interpretation:** CRSQ, SR-Q PNMRS, PEER	Relational victims had higher levels of rejection sensitivity (SR: $b = 0.41$, $p < 0.05$, PR: $b = 0.19$, $p < 0.05$), whereas overtly victimized children were higher on rejections sensitivity only according to their peers (PR: $b = 0.28$, $p < 0.05$)

Table 3 (continued)

Reference	Sample	Design	Measurements	Results
Ziv et al. (2013)	105 children, 13–14 years, ISR	CS	**Victimization:** BSRQ, SR-Q **Threat interpretation:** SIPQ, SR-Q	Victims expected perpetrators to react more avoidant than bullies, bully-victims and non-involved only in rejection stories (Provocation story $M(SE)_{victim}$=0.05(0.21), $M(SE)_{bully}$=0.07(0.27), $M(SE)_{bully\text{-}victim}$=0.07 (0.26), $M(SE)_{non\text{-}involved}$=0.06(0.23); Rejection story $M(SE)_{victim}$=0.73(0.46), $M(SE)_{bully}$=0.15(0.36), $M(SE)_{bully\text{-}victim}$=0.07(0.26), $M(SE)_{non\text{-}involved}$=0.22(0.42)). They expected perpetrators to react more aggressive than non-involved in provocation stories, and than bullies and bully-victims in rejection stories (Provocation story $M(SE)_{victim}$=0.95 (21), $M(SE)_{bully}$=0.78(0.42), $M(SE)_{bully\text{-}victim}$=0.87(0.35), $M(SE)_{non\text{-}involved}$=0.39(0.49); Rejection story $M(SE)_{victim}$=0.09(0.29), $M(SE)_{bully}$=0.30(0.47), $M(SE)_{bully\text{-}victim}$=0.47(0.52), $M(SE)_{non\text{-}involved}$=0.03(0.17)). They expected less prosocial reactions of perpetrators than non-involved in provocation stories, and than bullies and non-involved in rejection stories (Provocation story $M(SE)_{victim}$=0(0), $M(SE)_{bully}$=0.15(0.36), $M(SE)_{bully\text{-}victim}$=0.07(0.26), $M(SE)_{non\text{-}involved}$=0.56(0.50); Rejection story $M(SE)_{victim}$=0.18 (0.39), $M(SE)_{bully}$=0.56(0.51), $M(SE)_{bully\text{-}victim}$=0.47(0.52), $M(SE)_{non\text{-}involved}$=0.75(0.44))

CS cross-sectional, *L* longitudinal, *SR-Q* self-report questionnaire, *PaR-Q* parent-reported questionnaire, *TR-Q* teacher-reported questionnaire, *PEER* peer nomination. See Table 7 for abbreviations of the questionnaires and tasks

over time on victimization (Espelage et al., 2018b). Another study examined empathy (cognitive, affective, and somatic) separately for negative and positive feelings of others, and found mixed results (Chen et al., 2021). It must be noted, however, that these significant results (7 of 11 correlations), were only very small in size (r's all < 0.07).

Nonetheless, some studies reported consistent associations between victimization and empathy. In studies examining specific bully-roles, traditional victims and not cyber-victims might have slightly higher levels of affective empathy, whereas only cyber-victims might have slightly higher levels of cognitive empathy when compared to outsiders or non-involved peers (Arató et al., 2020; Martínez et al., 2020). A third study, however, found that victims, compared to non-involved peers, had lower self-reported empathy (Mendoza-González et al., 2020). Some studies (9 out of 44), not comparing bullying roles, found that victimization related to less affective empathy (Chan & Wong, 2015), less cognitive empathy (Nasaescu et al., 2018; Williford et al., 2016) and less general empathy (Farrell et al., 2018; Jenkins et al., 2016, 2017; Malti et al., 2010; Pistella et al., 2020; Yudes et al., 2020). Nevertheless, other research reported a positive association of victimization (13 out of 44, of which 5 also reported some ns associations with (subtypes of) empathy), with affective empathy (Hood & Duffy, 2018; Kokkinos & Kipritsi, 2012; Nasaescu et al., 2018; Rodríguez-Hidalgo et al., 2018, 2019; van Noorden et al., 2016), cognitive empathy (Arató et al., 2020; Lázaro-Visa et al., 2019; Rodríguez-Hidalgo et al., 2018; van der Ploeg et al., 2017), and general empathy (Donat et al., 2020; Yang et al., 2020). Furthermore, one study found a between-person effect for general empathy and victimization (Espelage et al., 2018b). It is possible that the contradicting findings happened because of capitalization of chance. Studies with significant associations mostly utilized small samples or found small to very small effect sizes. The quality of studies with non-significant and significant findings was quite similar ($M_{ns} = 8.11$, $SD = 1.89$ versus $M_{sig} = 8.91$, $SD = 1.54$), providing support for the expectation that these results were a capitalization of chance. Furthermore, the studies with positive associations also did not differ from the studies finding negative associations, with respect to quality assessment ($M_{pos} = 8.85$, $SD = 1.46$; $M_{neg} = 8.90$, $SD = 1.66$). The studies with more power provided no or little evidence that victimization related to empathic abilities. However, there is a difference between empathic abilities and motivation to use empathic abilities. Only one study investigated motivation-related aspects and found that, although victims did not differ from non-victims in empathic abilities, they showed less cognitive and affective empathy for bullies and bully-victims than for non-involved peers (van Noorden et al., 2017). In other words, victims might be able to empathize with others, but not willing to do so with everyone.

Theory of Mind Table 6 shows that the few studies (9) examining victimization in relation to ToM skills (i.e., the ability to ascribe mental states to others) showed diverse results. Some studies found no evidence for an association between victimization and ToM skills (4 out of 9), either first or second order false belief (Caravita et al., 2010; Espelage et al., 2018; Monks et al., 2005; Renouf et al., 2010), which is in line with the findings on empathy. Two studies found mixed results, showing evidence that victims score worse than bullies and non-involved children on cognitive, but not emotional ToM aspects (Gasser & Keller, 2009; Gini, 2006). Furthermore, three other studies indicated that victimization related to ToM skills negatively (Hsieh et al., 2019; van Dijk et al., 2017), with some evidence that a relative ToM deficit leads to future victimization (Shakoor et al., 2012). Overall, the association between ToM skills and victimization seems either absent or (negative and) small in magnitude.

Discussion

Social cognition, and hence how victims experience their social world, is likely affected by bullying, but the nature of this relation was unclear. Victims may become more sensitive to threat attempting to prevent or counteract new bullying situations (*prevention hypothesis*). However, children may also become more sensitive to positive cues while they try to restore their social situation (*reaffiliation hypothesis*). Finally, persistent victimization may cause a numbing effect on social cue processing to prevent the negative experience of victimization (*desensitization hypothesis*). The results of this systematic review on the literature on social cognition of victims across childhood and adolescence, mostly align with the *prevention hypothesis*. The review suggests that victims might have heightened attention to negative or threatening social cues, a less accurate registration of cues, and worse negative emotion recognition (encoding). Furthermore, victims perceived peers more negatively, attributed more hostile intent, and were more sensitive for rejection (interpretation). However, they did not differ in empathic skills. These results indicate that, regardless of whether the social-cognitive style is a precursor or consequence of victimization (or both), there might be a risk for negative spirals, in which negative interpretations may affect future experiences. According to SIP theory, encoding and interpretation of information and previous experiences have consequences for the displayed behavior (Table 7). As victims seem to have a negative social-cognitive style, they likely align their behavior accordingly. Indeed, victims' social-cognitive style seems related to later aggressive behavior (Troop-Gordon et al., 2019; Yeung & Leadbeater, 2007). If victims display more negative and perhaps unexpected

Table 4 Study results on peer perception

Reference	Sample	Design	Measurements	Results
Aldridge et al. (2020)	6120 adolescents, grades 7–12, AUS	CS	**Victimization:** 6 Q's, SR-Q **Peer perception:** WHITS, SR-Q	In a SEM peer connectedness was not significantly related to victimization in the past 3 weeks
Audley et al. (2020)	216 adolescents, grades 3–6, USA	CS	**Victimization:** RCP, PEER **Peer perception:** PLOT, SR-Q	Physical victimization related negatively to being positive about peers ($r_{boys} = -0.36$, $p < 0.001$; $r_{girls} = -0.20$, $p = 0.04$)
Barzeva et al. (2020)	2772 adolescents, W1 average 11.1 years, NLD	L: 3 waves every 2–3 years	**Victimization:** YSR, SR-Q; CBCL, PR-Q **School social climate:** SPF, SR-Q	Victimization related negatively to feeling accepted by classmates (r's between -0.32 and -0.13, $p < 0.01$)
Bayar & Uçanok (2012)	1263 children, 12–18 years, TUR	CS	**Victimization:** TBI, SR-Q, CBI, SR-Q **Peer perception:** GPP, SR-Q SSCS, SR-Q	Traditional victims were less positive about peers than bullies and non-involved peers measured with the GPP ($F(3, 1257) = 41.22$, $p < 0.001$, $\eta^2 = 0.02$, post hoc $p < 0.05$), but not with the SSCS ($F(3, 1253) = 7.95$, $p < 0.001$, $\eta^2 = 0.02$, post hoc $p > 0.05$) Cyber bully-victims, but not cyber pure-victims, were less positive about peers than non-involved peers and bullies measured with the GPP ($F(3, 1250) = 6.63$, $p < 0.001$, $\eta^2 = 0.02$, post hoc $p < 0.05$), but when measured with the SSCS ($F(3, 1247) = 9.47$, $p < 0.001$, $\eta^2 = 0.02$, post hoc $p > 0.05$)
Berg & Aber (2015)	3416 children, average 8.5 years, USA	L: 2 waves over 6 months	**Victimization:** VicScale, SR-Q **Peer perception:** SSCM, SR-Q	Victimization related positively to negative perceptions of the interpersonal climate ($b(SE) = 0.11(0.02)$, $p < 0.001$)
Betts et al. (2017)	280 children, 11–15 years, GBR	CS	**Victimization:** MPVS-R, SR-Q **Peer perception:** CGTBS, SR-Q	Victimization was for girls negatively related to trust beliefs about peers ($\beta = -0.29$, $p < 0.001$), but not for boys ($\beta = -0.16$, $p > 0.05$)
DePaolis & Williford (2019)	T1: 660 children, T2: 639 children, T3: 960 children, T4: 940 children, W1 average 9.4 years, USA	L: 4 waves over 1.5 years	**Victimization:** PEQ, SR-Q **Peer perception:** PPS, SR-Q	Initial cyber victimization did predict wave 4 peer perception (unsupportiveness, hostility, untrustworthiness) ($b_{intercept} = 0.51$, $p < 0.05$), yet change over time not ($b_{slope} = -7.26$; $b_{quadraatic} = -13.76$, p's > 0.05), when controlling for traditional victimization
Ding et al. (2020)	1529 adolescents, 12–19 years, CHN	CS	**Victimization:** BVQ, SR-Q CBQ, SR-Q **School social climate:** BSClimS, SR-Q	Adolescents who were either traditional bully-victims or cyber bully-victims did not judge the school climate differently than non-involved peers ($OR_{traditional} = 1.23$, $p = 0.378$; $OR_{cyber} = 0.63$, $p = 0.110$)
Elsaesser et al. (2013)	5625 children, 6th−8th grade, USA	L: 3 waves over 2 years	**Victimization:** PBFS, SR-Q **Peer perception:** VSCS, SR-Q	Relational victimization related negatively to positive perceptions on student relationships ($b = -0.23$, $p < 0.001$), which increased over time ($b = -0.18$, $p < 0.001$)
Garandeau & Lansu (2019)	Study 2: 601 adolescents, 11–17 years, NLD	CS	**Victimization study 2:** 3 Q's, PEER **Peer perception:** 4 Q's if the scenario-victim and -class-mates dislike the scenario-bully, SR-Q	Study 2: Victimization did not significantly relate to thinking that hypothesized bullies were disliked by others (scenario-victims dislike: $\beta = 0.01$, $p > 0.05$; scenario-victims dislike before incident: $\beta = -0.05$, $p > 0.05$; scenario-others dislike: $\beta = -0.10$, $p > 0.05$; scenario-others dislike before incident: $\beta = -0.08$, $p > 0.05$)
Gini (2008)	246 children, 116 average 9.6 years 130 average 12.5 years, ITA	CS	**Victimization:** Caravita Self-Report Scale, SR-Q **Peer perception:** SMAQ, SR-Q	For boys, victimization did not significantly relate to negative relationship perception ($r_{9\ year\ olds} = 0.18$, $p > 0.05$, $r_{12\ year\ olds} = 0.15$, $p > 0.05$), whereas for girls victimization was related to more negative perceptions of relationships ($r_{9\ year\ olds} = 0.32$, $p < 0.05$, $r_{12\ year\ olds} = 0.47$, $p < 0.001$)
Goldstein et al. (2020)	774 adolescents, 7–8 grade, average 12.8 years, USA	CS	**Victimization:** 3 Q's past month victimization SR-Q **Peer perception:** EPOS-P, SR-Q	Relational victimization related positively to thinking that your friends are more susceptible to peer influence ($r = 0.25$, $p < 0.01$), which was stronger for girls ($b = 0.24$, CI 0.17, 0.31, $p < 0.001$) than for boys ($b = 0.13$, CI 0.06, 0.20, $p < 0.001$)

Table 4 (continued)

Reference	Sample	Design	Measurements	Results
Guo et al. (2021)	12,642 adolescents, 10–17 years, USA HBSC-study	CS	**Victimization:** HBSC-CB, SR-Q **Peer perception:** HBSC-PS, SR-Q	Cyber-victims had less positive peer perceptions (enjoy being together, kind, helpful, accepting) than non-involved peers (OR = 0.84, $p < 0.05$) Cyber-bully-victims did not differ from their non-involved peers on positive peer perceptions (OR = 0.86, $p > 0.05$)
Harks & Hannover (2020)	Study 1: 318 adolescents, 8–17 years, DEU Study 2: 821 adolescents, 9–17 years, DEU	CS	**Victimization:** BVF, SR-Q **School social climate study 1:** FEESS 3–4, SR-Q **Study 2:** 4 Q's (Kunter, 2005), SR-Q	Victimization related negatively to positive social climate perceptions ($\beta_{S1} = -0.56$, $p < 0.001$; $\beta_{S2} = -0.48$, $p < 0.001$)
Holfeld & Baitz (2020)	1151 adolescents, 10–16 years, USA	CS	**Victimization:** CVS, SR-Q **School social climate:** ASCS6-S, SR-Q	Cyber-victimization related negatively to positive perceptions of the school climate ($r = -0.35$, $p < 0.001$)
Hong et al. (2019)	12,642 adolescents, 10–17 years, USA HBSC-study	CS	**Victimization:** HBSC-BV, SR-Q **Peer perception:** HBSC-PS, SR-Q	Victimization related negatively to positive peer perceptions (enjoy being together, kind, helpful, accepting) ($r = -0.26$, $p < 0.01$)
Hong et al. (2021)	4573 adolescents 3211 white, 1188 black, 175 biracial, HBSC-study 10–17 years, USA	CS	**Victimization:** HBSC-BV, SR-Q **Peer perception:** HBSC-PS, SR-Q	For both bi-racial and white adolescents was victimization related to negative perceptions of other students (unkind, unhelpful and unaccepting), but not for black adolescents ($\beta_{bi\text{-}racial} = 0.57$, $p < 0.001$; $\beta_{white} = 0.29$, $p < 0.001$; $\beta_{black} = 0.08$, $p = 0.399$)
Kaufman et al. (2020)	6237 adolescents, 9th grade, USA	CS	**Victimization:** PES, SR-Q **Peer perception:** 8 implicit belief Q's on social traits malleability, SR-Q	Victimization related positively to believing that others' personalities would not change ($r = 0.29$, $p < 0.001$)
Ladd and Troop-Gordon (2003)	399 children, 5–10 years, W1 average 5.5 years, USA	L: 6 waves over 5 years	**Victimization:** Nominate max 3 verbal and 3 physical victims, PEER **Peer perception:** PBI, SR-Q, Peer Trust Questionnaire, SR-Q	Persistent victimization did not lead to less positive peer perception ($r = -0.05$, $p > 0.05$), whereas victimization in 4th grade related negatively to positive peer perception ($r = -0.15$, $p < 0.01$)
Lázaro-Visa et al. (2019)	639 adolescents, 10–18 years, ESP	CS	**Victimization:** EBIPQ, SR-Q **School social climate:** SCFS, SR-Q	Victimization related negatively to positive school social climate perceptions ($r = -0.23$, $p < 0.001$)
Leadbeater et al. (2015)	1217 children, 6.7–11.3 years, CAN	L: 3 waves over 1.5 years	**Victimization:** SEQ, SR-Q **Peer perception:** SCS, SR-Q	Perceptions of interpersonal peer relationships did not significantly relate to subsequent victimization ($p > 0.05$), nor victimization in 2nd grade to the perceptions in 3rd grade ($p > 0.05$). Victimization (start of 3rd grade) related negatively to subsequent peer relationship perceptions later that schoolyear ($\beta = -0.09$, $p < 0.05$)
Mertens et al. (2021)	152 adolescents, 11–14 years, NLD	L: 2 waves over 4 months	**Victimization:** BVQ, SR-Q **School social climate:** CPCQ, SR-Q	At baseline, victimization related negatively to class cohesion perceptions ($r = -0.42$, $p < 0.01$), but not to conflict ($r = -0.15$, $p > 0.05$). At T2 (after Rock & Water intervention; Ykema 2002), there were no associations with victimization ($r_{cohesion} = -0.12$, $p > 0.05$; $r_{conflict} = -0.07$, $p > 0.05$)
Moyano et al. (2019)	3407 adolescents, average 11 years, ESP	CS	**Victimization:** DBQ, SR-Q **Peer perception:** QoC, SR-Q	In a SEM negative peer perception was positively related to victimization ($\beta_{relational} = 0.08$, $p < 0.05$; $\beta_{physical} = 0.15$, $p < 0.05$; $\beta_{cyber} = 0.12$, $p < 0.05$)

Table 4 (continued)

Reference	Sample	Design	Measurements	Results
Pouwels et al. (2017)	163 children, 9th–12th grade, NLD	L: 2 waves over 4 months	**Victimization:** PRQ, PEER **Peer perception:** Evaluation of peers on 6-point Likert scale, PEER	Victims in general did not have a different attitude toward the concept of bullying ($F(4, 157) = 0.90$, $p = 0.47$, $\eta_p^2 = 0.02$). Victims evaluated peers who were bullies or followers less positive than followers, whereas they evaluated peer victims better than bullies ($F(11.43, 448.74) = 3.02$, $p = 0.001$, $\eta_p^2 = 0.07$)
Purcell et al. (2021)	81 adolescents, 12–15 years, CAN	CS	**Victimization:** PES-R, SR-Q **Peer perception:** PBI, SR-Q	Victimization was negatively related to positive peer perception ($r_{general\ victimization} = -0.44$; $r_{overt} = -0.43$, $p < 0.01$; $r_{relational} = -0.29$, $p < 0.05$; $r_{reputational} = 0.41$, $p < 0.01$)
Rotenberg & Boulton (2013)	505 children, average 9.75 years, GBR	CS	**Victimization:** 3 Q's, PEER **Peer perception:** Rotenberg's trust belief Q's, SR-Q, PaR-Q	Victimization related negatively to being trusted by peers ($\beta = -0.33$, $p < 0.001$). Only for victims receiving little trust by peers was trusting peers related to higher levels of victimization ($\beta = -0.14$, $p < 0.01$) simple slopes: $b = 0.195$, $p < 0.001$)
Rudolph (2010)	206 children, average 10.13 years, USA	CS	**Victimization:** SEQ, SR-Q **Peer perception:** 12 relationship change Q's, SR-Q	Victimization was associated with higher levels of entity theories (relationships don't change, they are set; $r = 0.22$, $p < 0.01$)
Rudolph et al. (2009)	206 children, 7.8–13.5 years, USA	CS	**Victimization:** SEQ, SR-Q **Peer perception:** Evaluate partner in a task, SR-Q	Victims held more negative beliefs about their partner after dyadic-level variance was accounted for (ES = 0.21, $p < 0.01$). Dyadic conflicts had less impact on peer beliefs (ES = 0.12, $p < 0.10$)
Sainio et al. (2013)	4941 children, 14–15 years, Finland	L: 2 waves over 8 months	**Victimization:** BVQ, SR-Q **Peer perception:** GPP, SR-Q	Victimization (especially by same-sex peers) related for both boys and girls to concurrent negative peer perception ($\beta_{boys} = 0.16$, $p < 0.001$; $\beta_{girls} = 0.19$, $p < 0.001$). In girls, victimization by boys related to subsequent negative peer perception ($\beta = 0.11$, $p < 0.001$) and negative peer perception related to subsequent victimization by same- and other-sex peers ($\beta = 0.08$, $p < 0.01$)
Salmivalli & Isaacs (2005)	212 children, 11–13 years, Finland	L: 3 waves over 1 year	**Victimization:** 3 Q's, PEER **Peer perception:** 13 Q's on peer characteristics perception, SR-Q	Victimization related near-significantly to peer perception ($b = -0.10$, $p < 0.10$). Victimization at every wave was associated with peer perception (r's between -0.13 and -0.39, p's < 0.05), except for T2 victimization with T1 peer perception ($r = -0.13$, $p < 0.05$)
Schacter & Juvonen (2018)	5991 adolescents, 6th grade, USA	CS	**Victimization:** 1 Q, PEER **Peer perception:** 5 Q's on peer prosocial behavior, SR-Q	6th grade victimization as assessed by peers related to thinking their schoolmates were less prosocial ($r = -0.03$, $p < 0.05$)
Telzer et al., (2020)	38 girls, 14–16 years, USA	L: 8 annual waves	**Victimization:** SEQ-S, SR-Q **Peer perception:** MGT-set, Task	Victimization (W1-7) did not significantly relate to liking teammates better than non-teammates in the MGT task ($r = -0.13$, $p > 0.05$), nor related it to different levels of group identity bias ($r = 0.01$, $p > 0.05$)
Troop-Gordon & Ladd (2005)	381 children, 9–11 years, USA	L: 5 waves over 2.5 years	**Victimization:** 3 Q's, PEER **Peer perception:** PBI, SR-Q	Victimization related negatively to concurrent peer beliefs ($\beta_{boys} = -0.32$, $p < 0.001$, $\beta_{girls} = -0.24$, $p < 0.001$). Decreased positive peer perception was only for boys related to increases of victimization ($\beta = -0.22$, $p < 0.05$). Possible cause: Boys had greater changes in victimization
Van Noorden et al. (2014)	800 children, 7–12 years, NLD	CS	**Victimization:** 2 Q's, SR-Q, PEER **Peer perception:** JDM, Task	Victimization, self- and peer-reported, related positively to dehumanizing of friends in animalistic (denying human characteristics like honesty) and mechanistic (denying human nature like emotions) ways (PR: $\beta_{animalistic} = 0.10$, $p < 0.05$, $\beta_{mechanistic} = 0.10$, $p < 0.01$; SR $\beta_{animalistic} = 0.14$, $p < 0.001$, $\beta_{mechanistic} = 0.10$, $p < 0.01$)

Table 4 (continued)

Reference	Sample	Design	Measurements	Results
van Noorden et al. (2016)	Study 1: 405 children, 8–12 years, NLD Study 2: 264 children, 7–12 years, NLD	CS	**Victimization:** 1 Q, PEER **Peer perception:** AHC, SR-Q	Study 1: Victims attributed more antisocial characteristics toward non-friends than did non-involved peers ($M(SD)_{victim} = 50.3\ (26.7)$, $M(SD)_{non\text{-}involved} = 40.3(19.6)$, $p = 0.005$). Among boys, victims attributed less prosocial characteristics toward non-friends than bullies and non-involved peers ($M(SD)_{victim} = 43.8(20.6)$, $M(SD)_{bully} = 57.2\ (19.6)$, $M(SD)_{non\text{-}involved} = 58.7(15.7)$, $p = 0.008$) Study 2: Victims attributed more prosocial characteristics to non-involved than to bullies and bully-victims ($M(SD)_{non\text{-}involved} = 65.5(15.7)$, $M(SD)_{bully} = 51.6(16.3)$, $M(SD)_{bully\text{-}victim} = 51.2(17.8)$, $p < 0.001$) and more antisocial characteristics toward bullies and bully-victims than to non-involved peers ($M(SD)_{bully} = 35.0(21.2)$, $M(SD)_{bully\text{-}victim} = 35.1(20.5)$, $M(SD)_{non\text{-}involved} = 19.6(16.8)$, $p < 0.001$)

CS cross-sectional, *L* longitudinal, *SR-Q* self-report questionnaire, *PaR-Q* parent-reported questionnaire, *TR-Q* teacher-reported questionnaire, *PEER* peer nomination. See Table 7 for abbreviations of the questionnaires and tasks

behavior, it could lead to a downward spiral of victimization, as such behaviors may evoke bullying (Thornberg, 2010).

Although most evidence (56.3% of all articles, and 71.4% of articles only on peer perception and attribution of situations) was in favor of the *prevention hypothesis*, a considerable number of studies found insignificant or mixed results. Specifically, most studies indicated that victims did not differ from non-victims in their ability to recognize emotions in general, understand others' mental states and empathize with others' emotions. Some methodological issues in these studies should be considered. First, the utilized tasks might be improved. Emotion recognition tasks adopted by researchers are usually quite simple, for example, using basic emotions such as anger, happiness, sadness, and surprise that can be easily differentiated, or using long presentation and response times. Moreover, the questionnaires on empathy were often self-reported. Therefore, they required considerable self-reflection on one's own empathic abilities and possibly assessed whether children *try* to empathize with others instead of the *ability* to empathize. Last on the used tasks, ToM tasks were often quite simple, measuring first and second order ToM, which skills are usually mastered by most 5-year-olds (Perner & Wimmer, 1985), whereas the studies examined 7- to 9-year-olds. If severe problems arise in basic emotion recognition, basic empathy, or basic ToM skills, this may affect social functioning, as, for example, has been found for people with autism spectrum disorders (Trevisan & Birmingham, 2016). When no differences are found in basic or easy tasks, it does not guarantee that victims have no trouble with emotion recognition of short-lived or complex emotions, when different cues are shown simultaneously, or when people try to hide their emotions, such as in real life. A second possible methodological issue involves that in real life registration of social cues happens automatically. Having to report and explicitly think about it, might lead to different results in the lab compared with real-life social situations. Simple designs might thus not capture relevant (ecological valid) differences in victims. A last methodological issue relates to assessments of *having* versus *using* skills. The literature mostly focusses on having skills to understand others and not on whether these skills are *used* in social interactions. One study reported that victims did not differ from non-victims in empathic abilities, but reported lower levels of empathy for bullies and bully-victims than for non-involved peers (van Noorden et al., 2017). This finding is important as it indicates a difference between motivation and ability. Therefore, the motivational aspect should be considered when examining empathy, ToM, or social skills in further research.

While most evidence favored the *prevention hypothesis*, there was little evidence in favor of the *reaffiliation hypothesis*. To some extent this may be a consequence of few

studies examining more positive aspects of SIP. Researchers examining the interpretation SIP-phase focus mainly on negative interpretations, leaving the *reaffiliation hypothesis* understudied. Examining positive SIP aspects can help changing toward a more positive framework, with factors for personal growth to improve victims' resiliency, instead of focusing on (SIP) tendencies that may be detrimental. Similar to the *reaffiliation hypothesis*, the *desensitization hypothesis* is also understudied. Only two studies explicitly examined persistency of victimization. One study found that differences in longevity of victimization over five years did not relate significantly to positive peer beliefs, whereas the most recent victimization level related to less positive peer beliefs (Ladd & Troop-Gordon, 2003). The second study found that persistent victims were more sensitive to aversive stimuli than non-victims (Rudolph et al., 2016). Given the (limited) results, it cannot be discerned whether victimization recency or persistency is most influential on SIP. Studies on differences between recency and persistency of victimization in relation to SIP can also help unraveling the timing that SIP-styles take to change. Furthermore, it can help unravel whether victims perhaps move through different social-cognitive-styles as victimization persists. Initially, victims may try to *reaffiliate*, but when victimization does not cease, they may switch to the *prevention* style and if victimization persists for even longer periods, they may yet switch to the *desensitization* style.

Theoretical and Practical Implications

The *prevention hypothesis* was best supported in this review and stated that victims focus more on negative events or interpretations to be able to better prevent future negative experiences. These negative interpretations may be a precursor of initial victimization or play a role in maintaining victimization when one responds defensive or aggressive after such interpretations. Alternatively, these interpretations may be a result of previous victimization and thus be very realistic. It can be beneficial in ambiguous social situations, as this allows victims to avoid the situation and thus prevent social exclusion. Longitudinal studies examining victimization and intent attribution may provide more clarity on the causality of this relation.

Anti-bullying interventions can benefit from these insights, as social-cognitive factors are not commonly addressed in interventions (Ttofi & Farrington, 2011). Raising awareness about social-cognitive styles may break the downward spiral of victimization and result in changes in behavioral responses, as making automatic thoughts explicit is a core principle of cognitive behavioral therapy (Leahy & Rego, 2012). Moreover, as bullying is a social process and multiple parties are involved (Salmivalli, 2010), it could be beneficial to teach children how to use perspective taking skills and to acknowledge differences in perspectives (Imuta et al., 2016). This might lead to a better understanding of and more sympathy for one another, and to more prosocial behavior (Allen & Kinsey, 2013). For victims this could help to reevaluate their focus of attention, interpretations, and behavioral responses. Such changes in SIP of victims might reduce vulnerabilities or risk factors for future victimization. For non-involved peers, it could lead to better understanding of victims and higher levels of empathy, which likely leads them to respond differently.

Limitations of the Literature and Future Directions

A first limitation of the current review involves the examined victims in the included studies. Most of the time victims of bullying were examined as a homogeneous group. However, the victim group is quite heterogeneous with respect to whether victims also bully others (Lereya et al., 2015) and whether the victimization is long- or short-term (Kaufman et al., 2018). The conclusions might not hold for all types of victims, as there might be different processes at play for the different types of victims. There is some research investigating the interpretation SIP-phase of bully-victims. Some studies found that bully-victims had more negative interpretations of ambiguous scenarios than victims (Camodeca et al., 2003; Pouwels et al., 2016), whereas other studies found no evidence for a difference between victims and bully-victims (Bayar & Uçanok, 2012; Guy et al., 2017), and a last study found that it depended on the situation whether bully-victims had more negative interpretations (Ziv et al., 2013). Such studies typically did not address victimization duration, nor individual differences over time. Long-term victimization merits more attention, as it is related to indicators of both biological (Giletta et al., 2018) and mental stress (Hong et al., 2018). Moreover, long-term victims in schools with low levels of bullying (healthy context) have increased levels of mental health problems compared with long-term victims in schools with high levels of bullying (Huitsing et al., 2019). With increasingly more schools employing anti-bullying interventions, there is a strong and urgent need to identify factors that will improve interventions for long-term victims.

A second limitation of this review is that the role of development in social-cognitive abilities is hardly examined. As experience is used throughout all SIP-phases, it is expected that younger children have less experience in processing social information, and with more experience they will develop more advanced social-cognitive abilities. Consequences of victimization on the development of social-cognitive abilities can also be expected based on the *desensitization hypothesis.* With persistent victimization, social cognition of victims may become less focused on social cues, which may have consequences for the further

Table 5 Study results on empathy

Reference	Sample	Design	Measurements	Results
Arató et al. (2020)	524 adolescents, 12–19 years, Hungary	CS	**Victimization:** CVBS-S, SR-Q **Cognitive and affective empathy:** EmQue-CA, SR-Q	Cognitive empathy related to cyber-victimization ($\beta = 0.12$, $p < 0.01$), but not to affective empathy ($r = -0.01$, $p > 0.05$) Cyber-victims had higher affective empathy (M(SD) = 12.38(2.45)) than cyber-bullies (M(SD) = 10.80(2.51)) and cyber-bully-victims (M(SD) = 10.56(2.10)), but not non-involved (M(SD) = 12.40 (2.69)). Cyber-bully-victims had lower affective empathy than non-involved. Cyber-victims had higher cognitive empathy ($M(SD)$ = 7.89(1.27)) than cyber-bullies ($M(SD)$ = 6.77(1.80)) and cyber-bully-victims ($M(SD)$ = 6.74(1.68)), but not non-involved ($M(SD)$ = 7.41(1.37), $p < 0.01$)
Athanasiades et al. (2016)	440 children, 12–14 years, GRC	L: 2 waves over 4 months	**Victimization:** 1 traditional and 4 cyber-victimization Q's, SR-Q **Empathy:** 4 Q's, SR-Q	Only 2nd Grade traditional victimization and 3rd Grade empathy were related ($r = 0.13$, $p < 0.01$, other r's between 0.04 and 0.09, p's > 0.05). Only 3rd Grade cyber-victimization and 3rd Grade empathy were related ($r = 0.10$, $p < 0.05$, other r's between -0.07 and 0.02, $p > 0.05$)
Belacchi & Benelli (2020)	117 children, 8–11 years, ITA	CS	**Victimization:** ERQ-S, SR-Q **Cognitive and affective empathy:** IRI, SR-Q	Victimization was not significantly related to empathy ($r_{affective} = -0.08$, $p > 0.05$; $r_{cognitive} = -0.05$, $p > 0.05$)
Belacchi & Farina (2012)	188 children, 3–6 years, ITA	CS	**Victimization:** P8RQ, TR-Q **General, cognitive, and affective empathy:** IRI, TR-Q	Victimization was not related to general empathy ($r_{boys} = -0.12$, $p > 0.05$, $r_{girls} = -0.09$, $p > 0.05$), empathic concern ($r_{boys} = -0.01$, $p > 0.05$, $r_{girls} = -0.04$, $p > 0.05$) or perspective taking ($r_{boys} = -0.13$, $p > 0.05$, $r_{girls} = -0.13$, $p > 0.05$)
Berg & Aber (2015)	4016 children, 8.5 years, USA	CS	**Victimization:** VicScale, SR-Q **Empathy:** CEQ, SR-Q	Victimization did not significantly relate to empathy ($r = 0.02$, $p > 0.01$)
Caravita et al. (2010)	211 children, 9–11 years, ITA	CS	**Victimization:** PRQ, PEER **Affective empathy:** HIFDS, SR-Q	Victimization did not significantly relate to affective empathy (path coefficient N/A, $p > 0.05$)
Chan & Wong (2015)	1880 children, 11–19 years, Hong Kong	CS	**Victimization:** MLSC, SR-Q **Affective empathy:** 8 items of APASO-II and EQ, SR-Q	Victimization frequency did significantly relate to affective empathy ($b(SE) = -0.02(0.01)$, $p < 0.01$)
Chen et al. (2021)	4676 adolescents, 8–18 years, Hong Kong	CS	**Victimization:** MPVS, SR-Q **Cognitive, affective, and somatic empathy:** CASES, SR-Q	Physical victimization related negatively to cognitive empathy ($r_{positive\ aspects} = -0.06$, $p < 0.05$; $r_{negative\ aspects} = -0.04$, $p < 0.05$), and positively to feeling positive if others felt positive ($r = 0.03$, $p < 0.05$) and to mimicking physical responses (heartrate, sweat, flinch, tears) to other's negative experiences ($r = 0.07$, $p < 0.05$). Physical victimization did not significantly relate to feeling more negative when others felt negative ($r = -0.01$, $p > 0.05$) or to mimicking physical responses to other's positive experiences ($r = -0.01$, $p > 0.05$). Verbal victimization related affective empathy ($r_{positive} = 0.06$, $p < 0.05$; $r_{negative} = 0.02$, $p < 0.05$) and mimicking physical responses to others' emotions ($r_{positive} = 0.07$, $p < 0.05$; $r_{negative} = 0.07$, $p < 0.05$), but not to cognitive empathy ($r_{positive} = 0.02$, $p > 0.05$; $r_{negative} = 0.02$, $p > 0.05$)
Correia & Dalbert (2008)	187 adolescents, 12–18 years, Portugal	CS	**Victimization:** BPQ, SR-Q **Empathy:** IECA, SR-Q	Victimization did not significantly relate to empathy ($r = -0.04$, $p > 0.05$)
Donat et al. (2020)	1045 adolescents, 13–18 years, DEU	CS	**Victimization:** BPQ, SR-Q **Empathy:** IECA, SR-Q	Cyber-victimization related positively to empathy ($r = 0.14$, $p < 0.001$)

Table 5 (continued)

Reference	Sample	Design	Measurements	Results
Espelage et al., 2018	310 children, 11–12 years, USA	CS	**Victimization:** UIVS, SR-Q **Cognitive and affective empathy:** IRI PT and EC, SR-Q	Victimization did not significantly relate to empathy ($b(SE)_{cognitive} = 0.03(0.10)$, $p > 0.05$; $b(SE)_{affective} = -0.02(0.10)$, $p > 0.05$)
Espelage et al. (2018b)	1655 adolescents, 10–14 years, USA	L: 4 waves over 1.5 years	**Victimization**: UIVS, SR-Q **Empathy:** TCS, SR-Q	Victimization related positively to empathy ($r_{between\text{-}person\ effect} = 0.05$, $p < 0.001$). Adolescents' fluctuations of victimization level did not relate to that adolescents' fluctuation of empathy ($r_{within\text{-}person\ effect} = -0.01$, $p > 0.01$)
Estévez et al. (2019)	1318 adolescents, 11–18 years, ESP	CS	**Victimization:** MPVS, SR-Q **Cognitive and affective empathy:** TECA, SR-Q	Traditional victimization did not relate significantly to empathy ($b(SE)_{perspective\ taking} = 0.02(0.14)$, $p = 0.84$; $b(SE)_{empathetic\ stress} = 0.05(0.14)$, $p = 0.70$; $b(SE)_{emotional\ comprehension} = -0.03(0.13)$, $p = 0.79$; $b(SE)_{empathetic\ joy} = -0.03\ (0.13)$, $p = 0.82$). Cyber-victimization did not relate significantly to most forms of empathy ($b(SE)_{perspective\ taking} = 0.15(0.16)$, $p = 0.32$; $b(SE)_{empathetic\ stress} = -0.10(0.17)$, $p = 0.54$; $b(SE)_{empathetic\ joy} = 0.26(0.15)$, $p = 0.08$), yet near significant to emotional comprehension ($b(SE) = 0.29(0.14)$, $p = 0.05$)
Farrell et al. (2018)	Sample 1: 727 children, average 9.8 years, ITA	CS	**Victimization:** PBFS-TR, TR-Q **Empathy:** SSIS, TR-Q	Victimization (relational and physical) were negatively related to empathy as judged by teachers ($r = -0.33$, $p < 0.001$)
Hood & Duffy (2018)	175 children, 12–19 years, AUS	CS	**Victimization:** 7 Q's, SR-Q **Cognitive and affective empathy:** BES, SR-Q	Cyber-victimization did not relate significantly to cognitive empathy ($r = 0.07$, $p > 0.05$), but did relate positively to affective empathy ($r = 0.18$, $p < 0.05$)
Jenkins et al. (2016)	636 children, Grades 6–8, USA	CS	**Victimization:** BPBQ, SR-Q **Empathy:** SSRS, SR-Q	Generally, victimization related negatively to empathy ($\beta = -0.27$, $p < 0.001$). Only for girls, not boys, were lower levels of victimization related to higher levels of empathy ($\beta = 0.13$, $p < 0.05$)
Jenkins et al. (2017)	246 children, 12–14 years, USA	CS	**Victimization:** BPBQ, SR-Q **Empathy:** SSIS, SR-Q	Only male victims had lower levels of empathy ($r_{boys} = -0.33$, $p < 0.01$, $r_{girls} = -0.16$, $p > 0.05$)
Joo et al. (2020)	477 children who have witnessed bullying incidents, 9–11 years, USA	CS	**Victimization:** 1 Q, SR-Q **Cognitive and affective empathy:** IRI, SR-Q	Victimization did not relate significantly to empathy ($r_{affective} = 0.08$, $p > 0.05$; $r_{cognitive} = 0.01$, $p > 0.05$)
Kokkinos & Kipritsi (2012)	206 children, 10–13 years, GRC	CS	**Victimization:** BVS, SR-Q **General, cognitive, and affective empathy:** F&T, SR-Q	Victimization did not relate significantly to general empathy ($r_{general} = -0.01$, $p > 0.05$; $r_{direct} = 0.00$, $p > 0.05$; $r_{indirect} = -0.07$, $p > 0.05$). Victimization related positively affective empathy ($\beta = 2.21$, $p < 0.05$), but not significantly to cognitive empathy ($\beta = -1.27$, $p > 0.05$)
Lázaro-Visa et al. (2019)	639 adolescents, 10–18 years, ESP	CS	**Victimization:** EBIPQ, SR-Q **Cognitive and affective empathy:** BES, SR-Q	Victimization related positively to cognitive ability ($r = 0.08$, $p < 0.05$), but not significantly to affective empathy ($r = 0.05$, $p > 0.05$)

Table 5 (continued)

Reference	Sample	Design	Measurements	Results
Lomas et al. (2012)	68 children, 12–16 years, AUS	CS	**Victimization:** PRQ, SR-Q **Cognitive Empathy:** SUEIT, SR-Q	Victimization did not significantly relate to understanding others' emotions ($p > 0.05$)
Malti et al. (2010)	175 children, 6.1 years, Switzerland	L: 2 waves over 1 year	**Victimization:** BPI, SR-Q, PABI, TR-Q **Empathy:** 5 empathy Q's, SR-Q, PaR, TR-Q	First wave victimization did not relate significantly to empathy at any wave (r's between -0.13 and -0.09, $p > 0.05$). Second wave victimization related negatively to empathy levels during this wave ($r = -0.17$, $p < 0.05$). Increasing victimization levels related negatively to second wave empathy ($r = -0.17$, $p < 0.05$) and increases of empathy ($r = -0.17$, $p < 0.05$), but not to first wave empathy ($r = -0.03$, $p > 0.05$)
Martínez et al. (2020)	607 adolescents, 12–19 years, Peru	CS	**Victimization:** EBIPQ, SR-Q ECIPQ, SR-Q **Cognitive and affective empathy:** BES, SR-Q	Traditional victims, had slightly better skills in affective empathy than non-involved adolescents, whereas cyber-victims did not ($OR_{traditional} = 1.10$, $p < 0.05$; $OR_{cyber} = 0.92$, $p > 0.05$). In contrast, cyber-victims had slightly higher levels of cognitive empathy ($OR_{traditional} = 1.06$, $p > 0.05$; $OR_{cyber} = 1.11$, $p < 0.05$) than non-involved adolescents Traditional bully-victims did not have different empathic skills than non-involved adolescents ($OR_{affective} = 1.03$, $p > 0.05$; $OR_{cognitive} = 1.05$, $p > 0.05$). Cyber-bully-victims did have slightly higher affective empathy levels than non-involved adolescents ($OR = 1.11$, $p < 0.05$), but not cognitive empathy ($OR = 1.00$, $p > 0.05$)
Mendoza-González et al. (2020)	1190 adolescents, 8–16 years, Mexico	CS	**Victimization:** MBQ, SR-Q **Empathy:** SACS, SR-Q	Victims had lower self-reported empathy than non-involved peers ($d = 0.52$), as did bully-victims ($d = 1.57$)
Nasaescu et al. (2018)	2139 adolescents, 11–19 years, ESP	CS	**Victimization:** EBIPQ, SR-Q **Affective empathy:** E-MQ, SR-Q **Cognitive empathy:** SEC-Q, SR-Q	Cyber victimization related positively to being able to perceive others' emotion online ($r = 0.06$, $p < 0.05$). Cyber victimization related negatively to being aware of other's needs and how to act on it ($r = -0.07$, $p < 0.01$)
Pistella et al. (2020)	284 children, 2–6 years, ITA	CS	**Victimization:** APVS, TR-Q **Empathy:** ZSS, TR-Q	Victimization related negatively to having sympathy for peers, as perceived by teachers ($\beta = -0.30$, $p < 0.05$)
Razjouyan et al. (2018)	505 adolescents, 16–18 years, Iran	CS	**Victimization:** RCQ, SR-Q **Empathy:** EQ, SR-Q	Cyber-bullying role did not significantly relate to empathy ($M(SD)_{victim} = 11.4(3.9)$; $M(SD)_{bystander} = 11.6(3.9)$; $M(SD)_{bully} = 12.3\ (4.2)$; $M(SD)_{non\text{-}involved} = 12.2(3.4)$, difference test $p > 0.05$)
Renati et al. (2012)	816 children, 16.1 years, ITA	CS	**Victimization:** Cyberties, SR-Q **Cognitive and affective empathy:** BES, SR-Q	Victims did not differ in affective or cognitive empathy (F tests with post-hoc, $p > 0.05$)
Rodríguez-Hidalgo et al. (2018)	25,684 adolescents, average 13.9 years, 24,204 born in ESP, 504 in ROU, 426 in Morocco, 282 in Colombia 268 in Ecuador, ESP	CS	**Victimization:** EBIPQ, SR-Q **Cognitive and affective empathy:** BES, SR-Q	Among Spanish adolescents only for the ones born in ESP related cyber-victimization positively to affective and cognitive empathy (ESP: $\beta_{cognitive} = 0.04$, $p < 0.001$; $\beta_{affective} = 0.04$, $p < 0.001$; Morocco, ROU, Columbia, Equador cognitive and affective empathy betas ranged between -0.06 and 0.13, p's > 0.203). This is possibly due to the larger n for the Spanish subset

Table 5 (continued)

Reference	Sample	Design	Measurements	Results
Rodríguez-Hidalgo et al. (2019)	Sample 1: 14,437 adolescents, average 14.0 years, ESP Sample 2: 10,753 adolescents, average 13.8 years, Ecuadaor	CS	**Victimization:** EBIPQ, SR-Q **Cognitive and affective empathy:** BES, SR-Q	Sample 1: Victimization related positively to affective empathy ($\beta = 0.03$, $p < 0.001$), but not significantly to cognitive empathy ($\beta = 0.01$, $p = 0.173$) Sample 2: Victimization related positively to empathy ($\beta_{affective} = 0.04$, $p < 0.001$; $\beta_{cognitive} = 0.04$, $p = 0.002$)
Rodríguez-Hidalgo et al. (2020)	Sample 1: 14,206 adolescents, 11–18 years, ESP Sample 2: 10,737 adolescents, 11–18 years, Ecuador	CS	**Victimization:** ECIPQ, SR-Q **Empathy:** BES, SR-Q	In a SEM cyber-victimization did not relate significantly to empathy ($b_{Ecuador} = 0.18$, $p > 0.05$; $b_{ESP} = 0.18$, $p > 0.05$)
Schoeps et al. (2018)	148 adolescents, 12–15 years, ESP	L: 3 waves over 6 months	**Victimization:** CYB-VIC, SR-Q **Empathy:** ESCQ, SR-Q	Cyber-victimization at any time did not significantly relate to understanding others' emotions (r's between -0.10 and 0.17, p's > 0.05), except for cyber-victimization at T2 and understanding others' emotions at T3 ($r = -0.19$, $p < 0.05$)
Schokman et al. (2014)	284 children, 11–18 years, AUS	CS	**Victimization:** PRQ, SR-Q **Cognitive empathy:** SUEIT, SR-Q	Victimization did not relate significantly to understanding emotions of others ($\beta = 0.05$, $p = 0.50$)
Schultze-Krumbholz & Scheithauer (2013)	77 children, 12.5 years, DEU	L: 2 waves over 5 months	**Victimization:** CCS, SR-Q, BVQ, SR-Q **Affective empathy:** SRQ, SR-Q **Cognitive empathy:** IRI-PT, SR-Q	Cyber-victimization at wave 2 did not relate significantly to cognitive and affective empathy over the predictive value of cyber-victimization at wave 1 ($p > 0.05$)
Schultze-Krumbholz et al. (2020)	897 adolescents, 11–17 years, DEU	CS	**Victimization:** ECIPQ, SR-Q **Cognitive and affective empathy:** IRI, SR-Q	On the individual level victimization and empathy were not significantly related ($b(SE)_{affective} = -0.01(0.02)$, $p > 0.05$; $b(SE)_{cognitive} = 0.01(0.03)$, $p > 0.05$)
Troop-Gordon et al. (2019)	484 children, grades 4–5, average 10.3 years, USA	L: 2 waves over 6 months	**Victimization:** MPVI, PEER **Empathy:** IECA, SR-Q	Victimization did not significantly relate to general empathic abilities ($r_{girls} = 0.05$, $p > 0.05$; $r_{boys} = -0.11$, $p > 0.05$)
Van Der Ploeg et al. (2017)	4209 children, 11.3 years, Finland	L: 3 waves over 12 months	**Victimization:** BVQ, SR-Q **Cognitive and affective empathy:** 7 Q's, SR-Q	Victimization related positively cognitive empathy ($r = 0.05$, $p < 0.05$), but not significantly to affective empathy ($r = 0.03$, $p > 0.05$)
van Noorden et al. (2016)	800 children, 7–12 years, NLD	CS	**Victimization:** 1 Q, SR-Q **Cognitive and affective empathy:** BES, SR-Q	Victimization severance related positively to empathy ($\beta_{cognitive} = 0.12$, $p < 0.05$; $\beta_{affective} = 0.08$, $p < 0.001$), whereas victimization frequency did not significantly relate to empathy ($\beta_{cognitive} = 0.04$, $p > 0.05$; $\beta_{affective} = 0.08$, $p > 0.05$)

Table 5 (continued)

Reference	Sample	Design	Measurements	Results
Van Noorden et al. (2017)	264 children, 7–12 years, NLD	CS	**Victimization:** 1 Q, PEER **Cognitive and affective empathy:** BES, SR-Q	Children with different bully roles did not differ in cognitive (F tests < 2.5) or affective empathy (F tests < 1). The target of empathic feelings mattered. Victims had lower affective and cognitive empathy for bullies and bully-victims than non-involved children ($\eta^2_p = 0.23$)
Warden & Mackinnon (2003)	58 children, 9–10 years, GB-SCT	CS	**Victimization:** 1 Q, PEER **Empathy:** IECA, SR-Q	Bully-role (prosocial, bully, victim) did not significantly relate to empathy when gender was taken into account ($F(2,54) = 1.07$, $p = 0.349$)
Williford et al. (2016)	431 children, 10.2 years, USA	L: 5 waves over 3 years	**Victimization:** BVQ, SR-Q **Cognitive empathy:** IRI-PT, SR-Q	Victims had lower levels of cognitive empathy over time ($b = -0.05$, CI -0.10, -0.00, $p < 0.05$)
Williford et al. (2014)	1077 children, 10.2 years, USA	L: 5 waves over 3 years	**Victimization:** BVQ, SR-Q **Cognitive empathy:** IRI-PT, SR-Q	Victims in 5th grade did not differ from non-involved children in the overall sample on cognitive empathy ($p > 0.05$), but had higher levels in the control sample (sample with no Youth Matters intervention, $p < 0.05$). Results on cognitive empathy of victims in transition between 5 and 6th grade were inconclusive
Yang et al. (2020)	23,532 adolescents, grade 4–12, USA	CS	**Victimization:** DBVS-S, SR-Q **Empathy:** DSECS-S, SR-Q	Adolescents who were more often victimized, reported a higher level of thinking and caring about how others feel ($b(SE) = 0.20(0.02)$, $p < 0.001$)
Yudes et al. (2020)	2039 adolescents, 12–18 years, ESP	CS	**Victimization:** ECIPQ, SR-Q **Empathy:** WLEIS, SR-Q	Adolescents who were more often online victimized, reported lower ability levels of understanding others' emotions ($r = -0.14$, $p < 0.01$)

CS cross-sectional, *L* longitudinal, *SR-Q* self-report questionnaire, *PaR-Q* parent-reported questionnaire, *TR-Q* teacher-reported questionnaire, *PEER* peer nomination. See Table 7 for abbreviations of the questionnaires and tasks.

Table 6 Study results on ToM

Reference	Sample	Design	Measurements	Results
Caravita et al. (2010)	211 children, 9–11 years, ITA	CS	**Victimization:** PRQ, PEER **Theory of mind:** 10 vignettes from Happé, SR-Q	Victimization did not significantly relate to ToM ability ($p > 0.05$)
Espelage et al. (2018)	310 children, 11–12 years, USA	CS	**Victimization:** UIVS, SR-Q **Theory of mind:** Vignettes of 1st and 2nd order false-belief and understanding lies and irony, SR-Q	Victims did not differ in ToM ability ($b(SE) = 0.03(0.03)$, $p > 0.05$)
Gasser & Keller (2009)	212 children, 7–8 years, Switzerland	CS	**Victimization:** PABI, TR-Q, PEER **Theory of mind:** 2nd order false-belief vignettes, SR-Q	Victims were worse on false-belief aspects of ToM ability ($M(SD) = 0.92(0.71)$), than prosocial children and bullies ($M(SD)_{pro\text{-}social} = 1.46$ (0.84), $p < 0.008$; $M(SD)_{bullies} = 1.34$ (0.83), $p < 0.06$). Only for girls did victims differ in understanding display rules from bullies ($M(SD)_{victims} = 1.38(0.82)$) $M(SD)_{bullies} = 1.84(0.38)$, $p < 0.02$)
Gini (2006)	204 children, 9–11, ITA	CS	**Victimization:** PRQ, PEER **Theory of mind:** Cognitive vignettes, SR-Q Emotion vignettes, SR-Q	Victims were worse on cognitive aspects of ToM ability than defenders ($M(SD)_{victim} = 2.88(1.61)$, $M(SD)_{defenders} = 4.03(1.38)$, $p = 0.04$, $\eta^2 = 0.058$), but not to other roles (bullies, assistants, reinforcers, outsiders). Victims were no different on affective aspects of ToM ability ($p > 0.05$)
Hsieh et al. (2019)	6233 children, 9–10 years, TWN	CS	**Victimization:** 7 Q's, SR-Q **Theory of mind:** TSIS, SR-Q	Victimization related negatively to understanding and predicting others' thoughts and feelings ($r_{SIP} = -0.03$, $p < 0.05$, $r_{social\ awareness} = -0.16$, $p < 0.01$)
Monks et al. (2005)	104 children, 4–6 years, GBR	CS	**Victimization:** Cartoon picture showing victim personage, PEER **Theory of mind**: Smarties, SR-Q, Sally-Anne, SR-Q	Children with different bully roles did not differ in ToM ability ($F(2,59) = 1.94$, $p > 0.05$)
Renouf et al. (2010)	574 children, 5.3 years at wave 1, CAN	L: 2 waves over 0.7 years	**Victimization:** 3 Q's, TR-Q **Theory of mind:** Unexpected Identity Task, Task	Victimization did not significantly relate to ToM ability 0.7 years earlier ($r = -0.04$, $p > 0.05$)
Shakoor et al. (2012)	2,232 children, 5 years at wave 1, GBR	L: 2 waves over 2 years	**Victimization:** Bullying interviews, SR-Q, PaR-Q **Theory of mind:** 1st and 2nd order belief tasks, SR-Q	Twelve-year-old victims and bully-victims had lower ToM abilities at age 5 than non-involved children ($d_{victim} = 0.26$, $d_{bully\text{-}victim} = 0.44$)
Van Dijk et al. (2017)	143 children, 4–9 years, NLD	CS	**Victimization:** PABI, PEER **Theory of mind:** 1st and 2nd order belief, SR-Q	Victimization related positively to making errors on ToM tasks ($r = 0.13$, $p < 0.05$)

CS cross-sectional, *L* longitudinal, *SR-Q* self-report questionnaire, *PaR-Q* parent-reported questionnaire, *TR-Q* teacher-reported questionnaire, *Peer* peer nomination. See Table 7 for abbreviations of the questionnaires and tasks

Table 7 Abbreviations and characteristics of measurements

Abbreviation	Name	Type	Topic	Authors
AKT	Affect knowledge test	Task	Drawn faces with emotion; What emotion is displayed? (happy, angry, sad, scared). Vignettes of situations that evokes a particular common emotion, what would they feel? (Susie got an ice-cone; how is she feeling?)	Denham (1986)
APASO-II	Assessment program for affective and social outcomes 2nd version	SR-Q	Emotional response to the affective state of another individual (affective empathy)	Hong Kong Education and Manpower Bureau (2010)
APRI	Adolescent peer relations instrument	SR-Q	Traditional bullying and victimization	Parada (2000)
APVS	Alsaker peer victimization scale	TR-Q	Peer victimization	Alsaker & Valkanover (2001); Perren & Alsaker (2006)
AVS AVS-S	Attitude to victims scale (/shortened version)	SR-Q	Degree to which a person justifies bullying behavior, supports bullies and their desire to reject children who are victims of bullying based on supposed weakness	Rigby (1997); Rigby & Slee (1991)
ASCS6-S	American school Climate survey—student version (a 6-item version)	SR-Q	Feelings of safety and caring within the school environment	Hinduja & Patchin (2012)
BES	Basic empathy scale	SR-Q	Cognitive and affective empathy	Jolliffe & Farrington (2006)
BEIS-10	Brief emotional intelligence scale	SR-Q	Appraisal of one's own emotions, appraisal of others' emotions, regulation of one's own emotions, regulation of others' emotions, and use of emotions	Davies et al. (2010)
BFIS	Bullying and friendship Interview Schedule	SR-Q	Victimization (direct, relational, cyber) in the last 6 months	Wolke et al. (2001)
BIB	Bystander intervention in bullying	SR-Q	Noticing, interpreting, accepting, responsibility and know how to act and intervene in bullying situations. According to bystander intervention model	Jenkins & Nickerson (2017); Nickerson et al. (2014)
BIS	Behavioral inhibition scale	SR-Q	General sensitivity to aversive stimuli	Carver & White (1994); Muris et al. (2005)
BPBQ	Bully participant behavior questionnaire	SR-Q, TR-Q, PaR-Q	Five different bully roles (bully, assistant, victim, defender, outsider) of last 30 days	Summers & Demaray (2008)
BPI	Berkeley puppet interview	Inter-view	Two handpuppets give opposing statements, before the child gives his/her own response. Scale to measure victimization	Measelle et al. (1998); Perren et al. (2008)
BPQ	Bullying prevalence scale	SR-Q	Self-reported bullying prevalence	Rigby & Slee (1993)
BSRQ	Bullying self-report questionnaire	SR-Q	Four dimensions of being bullied (indirect, direct, physical, verbal) and 1 dimension of bullying others	Olweus (1991)
BVF	Bullying and victimization questionnaire	SR-Q	Physical, verbal, and relational forms of bullying and victimization	Von Marées & Petermann (2010); Harks & Hannover (2020)
BVQ	Revised olweus bully/victim questionnaire	SR-Q	Bullying and victimization	Olwes (1996); Solberg & Olwes (2003)
BVS	Bullying and victimization scale	SR-Q	Frequency of bullying and victimization involvement	Kokkinos & Logginidou (2005); Kokkinos (2007)
CASES	Cognitive, affective and somatic empathy scales	SR-Q	Cognitive, affective and somatic empathy for positive and negative feelings of others	Raine & Chen (2018)

Table 7 (continued)

CATS-N/P	Children's automatic thoughts scale-negative/positive	SR-Q	Negative and positive self-cognitions about physical threat, social threat, personal failure, hostility, and positi ve thoughts	Hogendoorn et al. (2010)
CBCL	Child behavioral checklist	PaR-Q	Behavioral and emotional problems of a child	Achenbach & Rescorla (2001)
CBI	Cyberbullying inventory	SR-Q	Cyberbullying and –victimization	Uçanok et al. (2011)
CBS	Child behavior scale	TR-Q, PaR-Q	Social and behavioral risk of children. Subscales: (1) Aggression with peers (2) Prosocial behavior with peers (3) Asocial behavior with peers (4) Anxiety-fear (5) Exclusion by peers (6) Hyperactivity-distractability	Ladd & Profilet (1996)
CBQ	Cyberbullying questionnaire	SR-Q	Involvement in cyberbullying	Menesini et al. (2011)
CCS	Chatvictim and chatbully scales	SR-Q	Cybervictimization and –bullying	Katzer et al. (2009)
CEQ	Children's empathy questionnaire	SR-Q	Empathic response in hypothetical and actual anticipated events	Funk et al. (2003)
CESQ-TR	Children's social experiences questionnaire–teacher version	TR-Q	Social experiences of the child, among which relational victimization	Cullerton-Sen & Crick (2005)
CGTBS	Children's generalized trust beliefs scale	SR-Q	Adolescents' trust in the general group of peers (reliability, emotional trust & honesty)	Rotenberg et al. (2005)
CPCQ	Classroom peer context questionnaire	SR-Q	Comfort, cohesion, and conflict in the class	Boor-Klip et al. (2016)
CPRS	Children's peer relations scale	SR-Q	Peer relations of the child, among others relational aggression, physical aggression, prosocial behaviors	Crick & Grotpeter (1995)
CRSQ	Child rejection sensitivity questionnaire	SR-Q	Rejection sensitivity with vignettes	Downey et al. (1998)
CSBS	Children's social behavior scale	SR-Q	Social behavior of the child, among others relational and overt victimization	Crick & Grotpeter (1995); Zimmer-Gembeck & Pronk (2012)
CSRS	Self-Report Scale by Caravita	SR-Q	Victimization and bullying	Caravita & Bartolomeo (2001)
CVS	Cyberbullying victimisation scale	SR-Q	Frequency of cyberbullying victimization experiences in the past 2–3 months	Hinduja & Patchin (2010)
Cyberties	Cyberties	SR-Q	Involvement in cyberbullying and if involved the frequency during the last 3 months	Renati et al. (2012)
CYB-VIC	Cyberbullying victimization scale	SR-Q	Cybervictimization	Buelga et al. (2012)
DANVA2	Diagnostic analysis of nonverbal accuracy-2	Task	Emotion recognition (happy, sad, angry, fear at two intensities)	Nowicki & Duke (1994); Nowicki (2013)
DBQ	Díaz-aguado bullying questionnaire	SR-Q	Relational, physical aggressive, and cyber-victimization and bullying	Díaz-Aguado et al. (2013)
DBVS-S	Delaware bullying victimization Scale—student	SR-Q	Student's perception of being victimized of bullying behavior	Bear et al. (2011); Bear et al. (2019)
DSECS-S	Delaware social emotional competencies scale—student	SR-Q	Social-emotional learning through responsible decision-making, social awareness, self-management and relationships	Bear et al. (2011); Bear et al. (2019); Mantz et al., 2018)
EAQC-R	Emotion awareness questionnaire for children revised	SR-Q	How one feels and thinks about their feelings (Differentiating emotions, Verbal sharing, Not hiding emotions, Attending to others' emotions, Analysis of emotions)	Rieffe et al. (2008)

Table 7 (continued)

EBIPQ	European bullying intervention project questionnaire	SR-Q	School bullying, victimization and perpetration	Ortega-Ruiz et al. (2016)
ECIPQ	European cyberbullying intervention project questionnaire	SR-Q	Cybervictimization and cyberaggression	Del Rey et al. (2015); Ortega-Ruiz et al. (2016)
STROOP	Emotional Stroop task	Task	Inhibition and whether emotional concepts interfere during stimulus processing	Williams et al. (1996)
EmQue-CA	Empathy questionnaire for children and adolescents	SR-Q	Affective empathy, cognitive empathy, and the intention to comfort	Overgaauw et al. (2017)
EMT	Emotion matching test	Task	Ability to match emotional expressions of pictures and verbal to visual presentations	Izard et al. (2003)
E-MQ	E-motions questionnaire	SR-Q	Emotional content perceived, expressed, used and managed in online communication	Zych et al. (2017)
EPOS EPOS-P	Extreme peer orientation scale	SR-Q	Peer influence susceptibility. Can be adjusted to measure perception of peer's influence susceptibility (EPOS-P)	Fuligni & Eccles (1993); Goldstein et al. (2020)
EQ	Empathy quotient	SR-Q	Empathy	Baron-Cohen & Wheelwright (2004)
ERQ-S ERQ-T	Eight roles questionnaire	SR-Q, TR-Q	Roles in bullying (bully, assistant, reinforcer, defender, consoler, mediator, victim and outsider)	Belacchi (2008); Belacchi & Farina (2010)
ERT	Emotion recognition task	Task	Emotion recognition	
ESCQ	Emotional Skills and Competencies Questionnaire	SR-Q	Empathy, in three factors: emotional perception and understanding, emotional expression and labeling, emotional management and regulation	Faria et al. (2006); Takšíc et al. (2009)
F&T	Feeling & thinking instrument	SR-Q	Empathy, the cognitive aspect (perspective taking, fantasy) and Affective aspect (Empathy concern, personal distress)	Garton & Gringart (2005)
FEESS 3–4	Fragebogen zur Erfassung Emotionaler und Sozialer Schulerfahrungen	SR-Q	School experiences, among which school social climate (EN name: Questionnaire for emotional and social school experiences of elementary school students)	Rauer & Schuck (2003)
FNSES	Fear of Negative Social Evaluation Scale	SR-Q	Expectations of negative evaluation by others	Tops et al. (2008)
GESK	Global emotion situation knowledge	Task	Emotion recognition of audio recordings (happy, sad, afraid, surprise, angry)	Garner et al. (1994)
GPP	Generalized Perception of Peers	SR-Q	Positive and negative qualities of peers (e.g. supportiveness, kindness, trustworthiness v.s. the opposite)	Salmivalli et al. (2005)
HAB	Hostile attribution bias measure	SR-Q	Hostile attributions through vignettes	(Leff et al., 2006, 2011)
HBSC	Health Behavior in School-aged Children	SR-Q	A standardized, international WHO measure to conduct repeated CS surveys in more than 40 countries, involves among others victimization questions (BV/CB) and peer perception (PS)	(Currie et al., 2009); Roberts et al., (2010);
HBQ-T	Macarthur Health and Behavior Questionnaire–Teacher Form	TR-Q	Includes (at least) aggression, peer acceptance, victimization, prosocial behavior subscales	Armstrong et al., (2003)
HIFDS	How I Feel in Different Situations	SR-Q	Affective and cognitive aspects of empathy	Feshbach et al. (1991)
HIT	How I think Questionnaire	SR-Q	Cognitive distortions, like self-centered, blaming others, minimizing/mislabeling, assuming the worst, but also behavioral referent subscales (lying, opposition-defiance, physical aggression, stealing)	Barriga & Gibs (1996)

Table 7 (continued)

IAM	Intent attribution measure	SR-Q	Attribution of intent through vignettes	(Crick, 1995; Crick et al., 2002)
IECA	Index of Empathy for Children and Adolescents	SR-Q	Empathy	Bryant (1982)
IRI	Interpersonal reactivity index	SR-Q	Interpersonal reactivity among which perspective taking (PT) and emotional concern (EC)	Davis (1980, 1983)
ITCT	Impending Transition to Secondary School Perceived as Challenge or Threat	SR-Q	Perception of the impending transition as academic or social threat or academic or social challenge	Sirsch (2003)
JDM	Juvenile dehumanization measure	Task	Mechanistic and animalistic dehumanization toward friends and non-friends Children see pictures with four planets or stars. They are asked to imagine other children of their own age living on these planets/stars. Each planet/star has their own profile (levels) of uniquely human characteristics (humble, thorough, polite) and human characteristics (trusting, friendly, sociable). Children choose which planet their friends (1) and non-friends (2) fit in	Van Noorden et al. (2014)
KAI	Kusche affective interview	Task	Measures emotion recognition (love, sad, scared, angry, excited, surprised, frustrated, proud, worried, happy)	Kusche et al. (1988)
LERT	Lieberman emotion recognition task	fMRI Task	Participants are presented with a negative (angry, fearful, sad) or positive (happy, surprised, calm) emotional face and are instructed to either passively view the emotional face or match the emotional face to one of two emotion word labels presented below the image	Lieberman et al. (2007); Rudolph et al. (2021)
LMSQ	Looming maladaptive style questionnaire	SR-Q	Tendency to perceive threats as rapidly escalating and coming closer	Riskind et al. (2000)
LQ	Leadership questionnaire	SR-Q	Leadership efficacy	Leff et al. (2010)
MBQ	Mendoza bullying questionnaire	SR-Q	Measures how often students direct aggression toward their peers (violence and bullying), are victims, bully, or bystander	Mendoza et al. (2015)
MGT	Minimal group task	Task	Digitalized version of the minimal group paradigm: Participants get randomly assigned to the red or blue team and told which team they are Learning part: Participants see facial pictures with a red or blue background. They have to indicate the team this person belongs to (red/blue) Social evaluation part: (afterwards) Participants see each red and blue team member and additional novel faces. They have to indicate how much they liked or disliked this person Memory part: Participants are tested on memory of the faces of red and blue team members, through a combination of seen (old) and unseen (new) faces	Bernstein et al., (2007); Telzer et al., (2020); Van Bavel et al., (2011)
MLSC	My Life in School Checklist	SR-Q	Among others traditional school bullying perpetration behavior, victimization and prosocial behavior in the last 30 days	Arora & Thompson (1987); Thompson et al. (2002)
MPVI	Multi-informant peer victimization inventory	Multi-informant Q	Peer victimization	Ladd & Kochenderfer-Ladd (2002)
MPVS-R	Multidimensional peer-victimization scale-revised	SR-Q, TR-Q, PaR-Q	Among others victimization	Betts et al., (2015); Ladd & Kochenderfer, (2002);
P8RQ	Participant 8 role questionnaire	SR-Q, TR-Q	Involvement in bullying (bully, assistant, reinforcer, outsider, victim, defender, consoler, mediator)	Belacchi, (2008); Belacchi et al., (2009)

Table 7 (continued)

PABI	Perren-alsaker bully interview	PR-Q, TR-Q	Bullying involvement. Peer nomination version: Interview with pictures of peers and nominate classmates. TR-Q: Questionnaire with Likert scale	Perren & Alsaker (2006)
PBFS	Problem behavior frequency scales	SR-Q	Among others bullying and victimization	Farrell et al. (2000); Miller-Johnson et al. (2004); Sullivan et al. (2006)
PBI	The peer belief inventory	SR-Q	Perceptions of peers, such as trustworthiness	Rabiner et al. (1993)
PECK	Personal experiences checklist	SR-Q	Personal experiences of relational-, verbal-, cyber- victimization, physical- and culture-based victimization	Hunt et al. (2012)
PES PES-R	(Revised) peer experiences scale	SR-Q	Experiences of relational peer aggression (victim and perpetrator)	De Los Reyes & Prinstein (2004); Prinstein et al. (2001)
PEQ	Peer experiences questionnaire	SR-Q	Peer-related experiences, including being victimized	Dill et al. (2004); Vernberg et al. (1999)
PIPSQ	Peer Interactions in Primary School Questionnaire	SR-Q	Among others direct and indirect bullying and victimization	Tarshis & Hufmann (2007)
PLOT	Peer life orientation test	SR-Q	Children's optimism versus pessimism about their peer relations	Deptula et al. (2006)
PNMRS	Peer Nomination Measure of Rejection Sensitivity	PR-Q	Rejection sensitivity as seen by peers (nomination)	Zimmer-Gembeck et al. (2014)
PPBS	Preschool play behavior scale	TR-Q	Among other things internalizing symptoms	Coplan & Rubin (1998)
PPS	Peer perception scale	SR-Q	Perceptions of peers, among which negative qualities of children's classmates (e.g., unsupportiveness, hostility, and untrustworthiness)	Salmivalli & Isaacs (2005); Salmivalli et al. (2005)
PPSS	Perception of Peer Support Scale	SR-Q, PR-Q	Among other things history of peer victimization experiences	Kochenderfer & Ladd (1997); Ladd and Kochenderfer-Ladd (2002)
PRS	Participant role scales	PR-Q	Bullying roles through peer nomination	Oude Nijhuis, (2001); Salmivalli et al., (1996);
PRQ	Shortened participant role questionnaire	PR-Q	Bullying involvement (bully, assistant, reinforcer, defender, outsider, victim) through peer nomination	Pouwels et al. (2016); Salmivalli & Voeten (2004)
PVM-TRF	Peer victimization measure—teacher report form	TR-Q	Victimization	Crick et al. (1999)
PSAQ	Peer social attribution questionnaire	SR-Q	Social attributions in vignettes of peer interactions	Hoza et al. (1990)
PVQ	Peer victimization questionnaire	SR-Q	Forms of peer maltreatment (verbal, physical and exclusion)	Lopez (1997)
QoC	Quality of Coexistence (no official name given)	SR-Q	Social integration, positive perceptions of relationships among peers and negative perceptions of relationships among peers	Díaz-Aguado et al. (2010)
RCP (RCP-C)	Revised Class Play (Chinese version)	PR-Q	Roles in the class, e.g. shy, victim, rejected through peer nomination	Chen et al. (1992); Masten et al. (1985)
RCQ	Razjouyan cyberbullying questionnaire	SR-Q	Cyberbullying through intrapersonal, interpersonal, stress management, adaptability, and general mood scales	Razjouyan et al. (2018)
RMET	Reading the Mind in the Eyes Test	Task	Emotion recognition	Baron-Cohen et al. (2001)
Sally-Anne	Sally-Anne task	Task	Theory of mind. Two dolls and their boxes. A marble might be changed First order false belief: Can they accurately indicate where dolls will look Second order false belief: Can they accurately indicate where a doll might think the other doll will look	Baron-Cohen et al. (1985)

Table 7 (continued)

SACS	Social Attitudes and Cognitive Strategies	SR-Q	Social attitudes and social strategies	Moraleda et al. (1998)
SAS-A	Social Anxiety Scale for Adolescents	SR-Q	Social anxiety among which fear of negative evaluation	La Greca & Lopez (1998)
SASC-R	Social Anxiety Scale for Children-Revised	SR-Q	Social anxiety, among which fear of negative evaluation by others	La Greca & Stone (1993)
SCFS	School Climate and Functioning Scale	SR-Q	Climate and functioning of the school	Oliva et al. (2011)
SCS	School climate survey	SR-Q, PaR-Q	Feelings about the general social environment of the school and the quality of relationships that exist with the school among adults and students	Haynes et al. (1993)
SEQ-S, SEQ-T, SEQ-P	Social experiences questionnaire	SR-Q, PR-Q, PR-Q	Social experiences, among others victimization	Crick & Grotpeter, (1996) (S); Cullerton-Sen & Crick (2005) (T); Crick & Bigbee (1998) (P)
SIPQ	Social information processing questionnaire	SR-Q	Intent attribution through vignettes	Dodge & Price (1994)
SSIS	Social skills improvement system rating scale	SR-Q	Social skill performance and engagement in problem behavior	Gresham & Elliott (2008)
Smarties	Smarties task	Task	First order false belief theory of mind	Perner et al. (1987)
SMAQ	School moral atmosphere questionnaire	SR-Q	Feelings about the school climate	Høst et al. (1998)
SPF	Social production function	SR-Q	Among other things classmate affection	Lindenberg (1996); Ormel et al. (1997)
SRQ	Sympathy reaction questionnaire	SR-Q	Sympathy	Volland et al. (2008)
SSCM	Sense of School as Community Measure	SR-Q	Safety feelings at school	Roberts et al. (1995)
SSCS	School social climate scale	SR-Q	Perceptions of school in general, teachers and students	Hanif & Smith, 2010
SSRS	Social Skills Rating System student version	SR-Q	Cooperation, assertion, self-control and empathy	Gresham & Elliott (1990)
SUEIT	Adolescent swinburne university emotional intelligence test	SR-Q	Among others cognitive empathy	Luebbers et al. (2007)
TANES	Threat Appraisals of Negative Events Scale	SR-Q	Youth's concerns about events	Kliewer & Sullivan (2008)
TBI	Traditional bullying inventory	SR-Q	Bullying and victimization	Uçanok et al. (2011)
TBQ	Traditional bullying questionnaire	SR-Q	Bullying involvement in the previous 3 months	Menesini et al. (2012)
TCS	Teen conflict scale	SR-Q	Adolescents' social behavior and cognition, including empathic concern	Bosworth et al. (1999)
TEC	Test of Emotion Comprehension	Task	Emotion understanding	Pons & Harris (2000)
TECA	Test de Empatía Cognitiva y Afectiva (Cognitive and Affective Empathy Test)	SR-Q	Affective (empathic stress and empathic joy) and cognitive empathy (perspective-taking and emotional comprehension)	López-Pérez et al. (2008)
TSIS	Trømso social intelligence scale	SR-Q	Self-reported social intelligence: SIP, social skills and social awareness	Silvera et al. (2001)

Table 7 (continued)

UIVS	University of Illinois Victim Scale	SR-Q	Non-physical victimization in the last 30 days	Espelage & Holt, (2001)
Unexpected Identity Task	Unexpected Identity task	Task	Theory of mind. The stimulus is a sponge covered with granite gray paint, so it looks like a rock. The sponge is shown to the child (most likely thinks it is a rock), then squeezed and placed on the table. Questions on appearance-reality distinction, representational change, false belief (if a puppet Molo sees it, what does he think it is?)	Flavell et al. (1983)
VicScale	Victimization scale	SR-Q	Victimization frequency	Orpinas & Kelder (1995)
VS	Victimization scale	SR-Q, TR-Q	Physical, indirect, direct and general victimization frequency	Ladd & Kochenderfer-Ladd (2002)
VSC	Victimization scale	SR-Q	Relational, Overt physical, Overt verbal victimization	Mynard & Joseph (1997)
WHITS	What's happening in this school?	SR-Q	Students' perceptions of the school climate	Aldridge & Ala'l (2013)
WLEIS	Wong & law emotional intelligence scale	SR-Q	Emotional intelligence: self–emotional appraisal, others' emotional appraisal, regulation of emotion, and use of emotion	Wong & Law (2002)
YSQ-3	Young schema questionnaire-3	SR-Q	Maladaptive schemas (among which rejection, impaired autonomy)	Young (2006)
YSR	Youth self-report	SR-Q	Problem behaviors through general internalizing and externalizing scales	Achenbach & Rescorla (2001)
ZSS	Zhou sympathy scale	TR-Q	Sympathy toward peers	Zhou et al. (2003)

SR-Q self-reported questionnaire, *TR-Q* teacher-reported questionnaire, *PR-Q* peer-reported questionnaire, includes peer nomination. *PaR-Q* parent-reported questionnaire

development of social-cognitive abilities. The development of social-cognitive abilities is backed by research findings such as that three year-olds do not pass ToM tasks on false belief, whereas five to six year-olds do (Wellman & Peterson, 2013). In other words, perspective-taking abilities, as well as other social-cognitive abilities, such as language skills, develop with age. However, to date most research on social cognition and victims of bullying is cross-sectional, limiting the conclusions regarding causality or developmental trajectories of social-cognitive styles of (long-term) victims. Possibly, victims with a *reaffiliation* style can break negative spirals of sustained victimization, whereas victims with a *prevention* style may not be able to do so, and they might eventually develop a *desensitization* style over time. Without longitudinal studies such developmental patterns cannot be discerned. Similarly, without longitudinal studies it cannot be determined whether certain aspects of social cognition are precursors, consequences or both precursor and consequence of victimization. Knowledge on whether social-cognitive aspects adopted by victims result in subsequent (long-term) victimization is highly valuable for interventions that aim to increase resilience of victims. Whereas this systematic review provided evidence for a social-cognitive style that is in line with the *prevention hypothesis*, based on the *desensitization hypothesis*, long-term victims are expected to have a social-cognitive style marked by insensitivity to social cues.

A third limitation involves the examination of encoding. Studies on encoding often rely on recall and are therefore vulnerable for memory biases (alternations, enhancements, or impairments). Negative social events might be more emotionally impactful for victims than positive ones, and thus, have more leverage in recall (LaBar & Cabeza, 2006; Roozendaal & Mcgaugh, 2012). First, this might bias these results in favor of the *prevention hypothesis*. Second, the results might be more indicative of differences in the database and not of encoding.

A last limitation is related to the studies examining interpretation. Peer perception and attribution of situations are often examined in relation to school- or classmates, meaning that these studies examine the school-context and therefore the context in which victims are commonly bullied. Due to the limited number of studies on peer perception and situational attribution over different contexts (e.g., sport clubs, and new places), it is currently unknown whether victims also have a more negative social-cognitive style when they interact with unknown peers, are in other contexts, and whether it has consequences for future interactions (e.g., being able to trust others and invest in new relationships).

The underlying neurobiological processes of social cognition are a relevant aspect not examined in this review. Prior research shows that victims had blunted cortisol responses to stress compared with non-victims (Vaillancourt et al., 2013). Because of such altered stress responses, victims might be more sensitive to threats and therefore adopt a prevention style. Along similar lines, neuroimaging studies showed that victimized or chronically rejected children had heightened neural responses to social exclusion, compared with non-victimized (McIver et al., 2018) or non-rejected children (Will et al., 2016), suggesting stronger neural sensitivity to negative social interactions (see for an overview: Güroğlu & Veenstra, 2021). Moreover, evidence exists that the strength of these neural responses is more strongly related to internalizing symptoms for long-term victims compared with non-victimized adolescents (Rudolph et al., 2016). In a recent large-scale study, it was found that bullying involvement related to brain structure. Victims differed in cortical thickness of the fusiform gyrus, a brain region involved in visual processing, from bullies, bully-victims and uninvolved children (Muetzel et al., 2019). Finally, it was shown that victimization experiences in childhood may modulate the relation between stress sensitivity and adolescent brain structure (Du Plessis et al., 2019), suggesting more complex relations between how early victimization experiences might influence future development. Despite evidence that victims have altered neural responses to social exclusion experiences, how these responses generalize across various processes of social cognition and differ for temporary versus long-term victims is largely unknown. Moreover, studies on neural processes of social cognition might inform on underlying motivational (Apps et al., 2016; Telzer, 2016) or regulatory processes (Sebastian et al., 2010), which might be difficult to assess using self-reports or observations of behavior. An example of possible underlying motivational processes is that victims were more empathetic toward non-involved children and friends compared with bullies and non-friends (van Noorden et al., 2017). Although motivation is hard to measure behaviorally, neural measurements might prove fruitful. Furthermore, given existing evidence on the role of neurobiological processes in atypical social cognition (e.g., seen in persons with autism spectrum disorder), a developmental neuroscience perspective is an important avenue for further research (Happé & Frith, 2014).

Conclusion

It had been unclear how victimization relates to social cognition, as many researchers only examined subcomponents of this complex construct. This systematic review reveals that victimization during childhood and adolescence relates to a stronger emphasis on negative events and a negative social-cognitive style, mostly in line with the *prevention hypothesis*. Victims appeared to have a heightened focus on negative or threatening social cues and represent social cues less accurately. Furthermore, they perceived peers more

negatively, attributed more hostile intent and were more sensitive to rejection than non-victimized children. However, they did not differ in empathic or ToM skills. Further research is needed on the (neurobiological) development of social-cognitive styles and in particular on persistent victims and whether they, in line with the desensitization hypothesis, become insensitive to social cues because of the long period of victimization. For now, researchers and practitioners (e.g., who develop anti-bullying interventions) should realize that, in line with the *prevention hypothesis,* victims focus on negative social cues.

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Declarations

Conflict of interest The authors declare that they have no conflict of interest.

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