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CLINICAL RESEARCH ARTICLE

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Understanding bullying as a significant predictor of posttraumatic stress symptoms in adolescents: insights from clinical samples in Norway, The Netherlands and Germany

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ABSTRACT

Background: Research on bullying and child PTSD has traditionally been conducted separately. This study examines the association between bullying and posttraumatic stress symptoms (PTSS) in three international samples, comparing its impact to other potentially traumatic events (PTEs) and assessing whether bullying predicts PTSS when controlling for other PTEs.

Method: We analyzed three large clinical samples of children and adolescents referred for mental health care in Norway ($N = 3370$, 63.4% female, Mage = 14.0), the Netherlands ($N = 952$, 68.7% female, Mage = 15.57), and Germany ($N = 707$, 39.0% female, Mage = 13.25), using the Child and Adolescent Trauma Screen (CATS or CATS-2) to measure bullying, PTEs, and PTSS. Two linear regression models were compared per sample: one with variable regression weights and one with constrained weights. We also evaluated unique R^2 shares to determine the distinct variance each PTE contributed to PTSS.

Results: Bullying was reported by 56.2% (Norway), 53.2% (the Netherlands), and 52.6% (Germany); cyberbullying was reported by 17.0% (Germany). Moderate correlations with PTSS severity were found ($r = .17–.37$ for bullying; $r = .36$ for cyberbullying). Clinically elevated PTSS were reported by 57.4%–73.1% of those bullied and 78.3% of cyberbullied youth. Bullying remained a significant predictor of PTSS, explaining 3.8% to 22.9% of variance after controlling for other PTEs, age, and gender.

Conclusions: From a socio-emotional developmental perspective, bullying is a significant risk factor for child PTSS. This association was stronger when bullying items included threat-based language. Specifying the nature of bullying is crucial in determining whether it meets trauma criteria.

Comprendiendo el acoso escolar como predictor significativo de síntomas de estrés postraumático en adolescentes: perspectivas a partir de muestras clínicas en Noruega, Países Bajos y Alemania

Antecedentes: Tradicionalmente, la investigación sobre el acoso escolar y el trastorno de estrés postraumático (TEPT) infantil se ha realizado por separado. Este estudio examina la asociación entre el acoso escolar y los síntomas de estrés postraumático (SEPT) en tres muestras internacionales, comparando su impacto con el de otros eventos potencialmente traumáticos (EPT) y evaluando si el acoso escolar predice los SEPT al controlar otros EPT.

Método: Analizamos tres grandes muestras clínicas de niños y adolescentes derivados a servicios de salud mental en Noruega ($N = 3.370$, 63,4% mujeres, edad media = 14,0 años), Países Bajos ($N = 952$, 68,7% mujeres, edad media = 15,57 años) y Alemania ($N = 707$, 39,0% mujeres, edad media = 13,25 años), utilizando la Escala de Evaluación de Trauma Infantil y Adolescente (CATS o CATS-2) para medir el acoso escolar, los EPT y los SEPT. Se compararon dos modelos de regresión lineal por muestra: uno con coeficientes de regresión libres y otro con coeficientes restringidos. También se evaluaron las aportaciones únicas de R^2 para determinar la proporción de varianza específica que cada EPT aportó a los SEPT.

Resultados: El 56,2% (Noruega), el 53,2% (Países Bajos) y el 52,6% (Alemania) reportaron haber sufrido acoso escolar, mientras que el 17,0% de los participantes en Alemania reportó haber

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Trauma; acoso escolar; infancia y adolescencia; muestras internacionales; SEPT

HIGHLIGHTS

- Bullying, especially when experienced as threatening, significantly predicts posttraumatic stress symptoms (PTSS) in children and adolescents.
- In three clinical samples, of over 5,000 children and adolescents from Norway, the Netherlands, and Germany, bullying was common and strongly associated with PTSS, even after controlling for other traumatic events.
- Our findings support the inclusion of bullying in routine trauma screening and recognition of severe bullying as a potentially traumatic event in diagnostic and clinical frameworks.

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sufrido ciberacoso. Se encontraron correlaciones moderadas con la gravedad de los SEPT (r = 0,17–0,37 para acoso escolar; r = 0,36 para ciberacoso). Entre el 57,4% y el 73,1% de quienes sufrieron acoso escolar y el 78,3% de los jóvenes que experimentaron ciberacoso reportaron niveles clínicamente elevados de síntomas de estrés postraumático. El acoso escolar se mantuvo como un predictor significativo de los SEPT, explicando entre el 3,8% y el 22,9% de la varianza, incluso tras controlar por otros EPT, la edad y el sexo.
Conclusiones: Desde una perspectiva del desarrollo socioemocional, el acoso escolar constituye un factor de riesgo relevante para los SEPT en la infancia y adolescencia. Esta asociación fue más fuerte cuando los ítems de acoso escolar incluían lenguaje basado en amenazas. Precisar la naturaleza del acoso escolar resulta crucial para determinar si cumple con los criterios de trauma.

1. Background

Bullying in childhood has been classified by the World Health Organization (WHO) as a major public health problem globally (World Health Organization, 2020a, 2020b). It is a form of aggression, which varies from indirect to direct and physical to emotional harassment. It occurs in the context of a relationship, often in peer-groups, where there is an imbalance between the bullied child and the child who is bullying. Bullying is widely described as a specific form of aggressive behaviour that is intentional, repeated, and involves a power imbalance between the perpetrator and the victim (Olweus, 1993). This definition forms the foundation of much of the current bullying research and highlights that bullying is not a one-time event but a pattern of behaviour that can have lasting psychological consequences. Bullying can take multiple forms, including physical, verbal, relational, and increasingly cyberbullying (Smith et al., 2023). Bullying poses a potent threat, especially for children as they normally develop their sense of self and social value during childhood and adolescence. A social threat – such as repeated bullying – could disturb their ability to establish their adult identities (Armitage, 2021). The severe emotional reactions following bullying are often mentioned to be 'traumatizing' (Cour et al., 2022; Miller et al., 2024; Pepler et al., 2004). However, research on bullying on the one hand and posttraumatic stress disorder (PTSD) research on the other hand, have originated as largely disconnected research traditions (Idsoe et al., 2021). The possible psychopathological consequences of bullying have been reported to be complex and manifold and include a range of disorders and symptoms, including depression (Moore et al., 2022), self-harm (Huang et al., 2022; Moore et al., 2022), suicidality and suicide attempts (Katsaras et al., 2018), substance abuse (Moore et al., 2017), psychotic symptoms (Cunningham et al., 2016), or somatic problems (Gini & Pozzoli, 2013; Moore et al., 2017). Although Nielsen et al. (2015) highlight in their review and meta-analyses on bullying and posttraumatic stress symptoms (PTSS) that 57% of victims report clinically elevated PTSS and a mean moderate correlation was found between bullying and PTSS in children and adolescents, it is still unclear whether bullying is only an additional stressor in children who are traumatized and suffer from PTSS or demonstrates effects over other PTEs. An important reason for this is the ongoing debate in the trauma research field about what constitutes a traumatic event (A-criterion) in the adult literature (Gradus & Galea, 2022; Marx et al., 2024; Norrholm et al., 2021; Weathers & Keane, 2007). Furthermore, Idsoe et al. (2021) value the consideration that a conceptual understanding of the consequences of childhood bullying needs to be framed within a developmental perspective. In ICD-11, bullying is included under the category of *history of maltreatment* (QE82), more specifically described under the subcategory *Personal history of psychological abuse* (QE82.2) as a matching term and in the context of assault and maltreatment as an extension code (XE4P2). For the diagnosis of PTSD, the ICD-11 defines the 'exposure to an event or situation (either short- or long-lasting) of an extremely threatening or horrific nature' as the trauma criterion (WHO, 2019). Like the ICD-11 definition of traumatic events for complex PTSD, bullying in schools can be considered extremely threatening, commonly prolonged or repetitive and escape from it is difficult or impossible due to compulsory schooling in many countries (WHO, 2019). The DSM-5 uses a more specific definition of traumatic events: 'The person was exposed to the following event(s): death or threatened death, actual or threatened serious injury, or actual or threatened sexual violence, in one or more of the following ways' (APA, 2013). Using this definition, diagnosis of PTSD is restricted to events that involve (extreme) threats to the physical or sexual integrity of a person, such as physical and sexual violence. From a socio-emotional, developmental, and clinical perspective, bullying can be considered a traumatic event for children and adolescents, when it includes threats to their physical integrity. In line with the impact of such experienced threats, a recent study on bullying and PTSS found that comparing experience of worst PTEs, reporting serious bullying as their worst experience resulted in the second highest PTSD rate after sexual trauma, and demonstrated even higher rates compared with reported

domestic violence, sudden loss, serious illness, community violence and non-interpersonal trauma as their worst experience (Birkeland et al., 2022).

One challenge with studies on bullying and PTSS may be that reported symptoms could also indicate other mental disorders. Another challenge with studies on bullying and PTSS is that adjustment disorder is frequently mentioned by clinicians and researchers who do not consider bullying a traumatic event, which can result in inadequate intervention that fails to address the child's underlying distress and psychological needs (Ossa et al., 2019; Plexousakis et al., 2019). In the context of bullying, this perspective adds to the injustice faced by children who experience bullying, as indicating that they are incapable of adjusting to ongoing threats, when they in fact should not have to adjust to bullying but rather be protected and defended (Ossa et al., 2019). Moreover, children are barely in charge of the surroundings they are growing up in. Their school and social surroundings are often determined by their school authorities, teachers and caregivers, as well as by the peer interaction at school and their peer environment. The lack of control adds to the feeling of powerlessness and increases the feeling of a threatening environment. Another major problem is that in clinical samples bullied youth often report other traumatic events that can influence the expression of PTSD. For example parental maltreatment and emotion dysregulation can lead to PTSD and are also risk factors for experiencing bullying during middle childhood (Shields & Cicchetti, 2001). Therefore, PTSD could be seen as the result of the maltreatment instead of the bullying (Nielsen et al., 2015). However, the symptoms could be a combination of factors, since there is a cumulative effect of traumatic events that augments the risk of developing PTSS and lifetime PTSD (da Silva et al., 2024). In summary, the relationship between bullying and PTSS/PTSD remains insufficiently understood, highlighting the need for further research.

Study Objectives: One way to further shed light on the impact of bullying on PTSS is to determine the relative importance of bullying compared with other traumatic events in traumatized treatment-seeking samples of children and adolescents. Bullying during childhood and adolescence may disrupt normative emotional development, decreasing trust in self and others, and emotion regulation capacities (Armitage, 2021; Olweus, 1993), which are relevant mechanisms in the development of PTSD. Understanding this relative impact can help inform more developmentally sensitive diagnostic criteria and intervention strategies. Our study will, therefore, investigate the associations and rates of clinically elevated PTSS after bullying with the size of these associations and rates of PTSS after DSM-5 based A-criterion events. Finally, we will compare the predictive power of prediction models with all PTEs as predictors with a series of reduced models, each missing one PTE as a predictor, to quantify the relative importance of different PTEs in the outcome PTSS.

2. Method

2.1. Participants and procedure

The study comprised three international clinical samples of children and adolescents, collected as part of the standard routine screening in mental health clinics, allowing us to investigate independent replication of the findings using similar assessments and the same statistical methods.

Norwegian Sample: Data from the Child and Adolescent Trauma Screen (CATS; Sachser et al., 2017) of $N = 3370$ children and adolescents were collected between 2015 and 2017 from 45 Norwegianfor child and adolescent mental health clinics. CATS was part of the standard intake screening, regardless of the reason for referral, and was completed either as self-report or with the therapist as the interviewer. The screening questionnaires were sent anonymously to the research team. The study was approved by the Norwegian Regional Committee for Medical and Health Research Ethics, and a waiver of consent was granted because obtained data were de-identified.

Dutch Sample: Data of the Child and Adolescent Trauma Screen-2 (CATS-2; Kooij et al., 2025) of $N = 953$ children and adolescents was collected from September 2021 until December 2023 at the Clinic for Child and Adolescent Psychiatry Levvel in Amsterdam. Since September 2021, the CATS-2 has been embedded as a standard part of the clinical intake procedure. Upon intake, all children and adolescents receive a set of questionnaires, including the CATS-2, which are administered online. The data are retrieved anonymously from the clinical data management system, ensuring confidentiality and standardized data collection across participants. Data retrieval was approved by the ethics commission of the Amsterdam University Medical Centre (W22_156).

German Sample: CATS-2 data of $N = 707$ children and adolescents was collected from July 2019 until July 2023 as part of the standard intake procedure at the Clinic for Child and Adolescent Psychiatry, Psychosomatics and Psychotherapy at Ulm University in Germany. The data are retrieved anonymously from the clinical files, ensuring confidentiality and standardized data collection across participants. The study received positive approval by the ethics committee of Ulm University (241/23).

2.2. Measures

The CATS, (Sachser et al., 2017) is a measure of PTEs and PTSS. At first, a checklist of 15 PTEs is presented in a 'yes'/'no' answer format (*Stressful or scary events*

happen to many people. Below is a list of stressful and scary events that sometimes happen. Mark YES if it happened to you. Mark NO if it didn't happen to you), followed by a list of DSM-5 PTSD symptoms rated on a 4-point-likert-scale (0 = 'never', 1 = 'once in a while', 2 = 'half the time', 3 = 'almost always'). Functional impairment is measured using 5 items assessing impairment in different domains with 'yes'/'no' answer format. The Norwegian CATS (Sachser et al., 2017), the Dutch CATS-2 (Kooij et al., 2025), and the German CATS-2 (Sachser et al., 2022) self-reports show strong psychometric evidence, with high reliability and validity of the questionnaire and confirmation of the DSM-5 factor structure.

In the current Norwegian sample, the CATS demonstrates excellent reliability (ω = .93). The CATS-2 in the current study shows excellent reliability in the German sample (ω = .92) and Dutch sample (ω = .92). Both versions of the CATS allow for a similar calculation of the DSM-5 PTSD symptom sum score based on 20 items (range 0–60). The validated sum score of ≥ 21 was used as an indicator of clinically elevated symptoms of PTSD for the CATS (Sachser et al., 2017), and the sum score of ≥ 25 for the CATS-2 (Kooij et al., 2025; Sachser et al., 2022).

The CATS-2 is an updated version of the CATS, which also allows capturing PTSD and CPTSD symptomatology according to ICD-11. For the current study, only the DSM-5 scale of the CATS-2 was used, so both measures are measuring the same construct (PTSD symptoms according to DSM-5). The event checklists cover the same constructs, but the German CATS-2 additionally measures bullying experiences online.

The following items in the PTE checklist were used to identify bullying in the respective samples: Norwegian sample: *Have you experienced severe bullying or threats. Also including online or on the phone*? German sample: *Someone bullying me in person. Saying very mean things that scare me*. Dutch sample: *I have been bullied.* Cyberbullying was separately measured in the German sample: *Someone is bullying me online. Saying very mean things that scare me*.

2.3. Statistical analyses

Using PTEs as assessed by the traumatic event checklist from the CATS/CATS-2 self-report as predictors, two linear regression models with the DSM-5 PTSD score as the dependent variable were calculated. To compare whether PTEs differ in their association with the DSM-5 PTSD score, in one model, regression weights were constrained to be equal, whereas in the other, regression weights were allowed to vary freely. Models were then compared using a χ^2 test. To check the assumptions for linear regression, the variance inflation factor (VIF) to assess multicollinearity (Sheather, 2009) and the Breusch–Pagan test as well as a scatter plot to check for homoscedasticity of the residuals, were calculated (Breusch & Pagan, 1979). To further investigate the individual PTEs, the relative importance of each predictor was calculated using the relaimpo package (Grömping, 2006) while controlling for age and gender. Relative importance depicts the individual proportion of explained variance by each predictor. Using bootstrapping methods provided by the relaimpo package, confidence intervals can be extracted allowing further comparisons between the predictors (Grömping, 2006). Confidence intervals were extracted via bootstrapping, which ran 1000 iterations taking into account Wilcox's (2010) suggestion of at least 599 iterations and probably more. Statistical analyses were conducted in R, version 4.3.2 (Team, 2020). A complete list of packages used for the analyses can be found in the appendix. The analyses were conducted independently for each of the three samples, and outcomes were compared.

3. Results

3.1. Norwegian sample

The sample had a mean age of 14.00 (*SE* = 0.046; range 6–19) and 63.4% being female and 36.4% male. The mode of potential traumatic events experienced was 2 (21.7%) and the mean CATS sum score was 21.3 (*SE* = 0.23). Detailed sample characteristics with the PTEs listed regarding their frequencies can be seen in Table 1. Of the *n* = 1894 (56.2%) who reported

Table 1. Norwegian sample *N* = 3370.

	N/M	*%/SE*	*r with PTSS*	*% PTSD**
Number of PTEs	3.50			
Severe accident	677	20.1	.06	53.9
Natural disaster	466	13.8	.06	55.4
Terrorism/war	186	5.5	.11	65.6
Medical	981	29.1	.09	53.5
Someone close severely hurt, ill or dead suddenly	2060	61.1	.10	52.0
Severe bullying/threats. Including on the internet	1894	56.2	.23	57.4
Kidnapping	219	6.5	.15	71.2
Assaulted, robbed, hurt, threatened in the community	1052	31.2	.21	61.8
Seen someone in the community fight or attack	968	28,7	.18	61.4
Seen someone in family fight or attack	883	26.2	.16	58.1
Been hit, kicked, pushed, threatened by family	1066	31.6	.13	56.4
Someone has taken pictures of private parts	182	5.4	.14	72.0
Someone has touched private parts, or force to touch others	716	21.2	.29	71.9
Rape or anal, oral or vaginal intercourse	448	13.3	.28	77.2
CATS-2 DSM-5 total score	21.3	0.232		
CATS ≥ 21	1652	49.0		

*The percentage of children that have a sumscore ≥ 21, indicating most likely a PTSD classification.

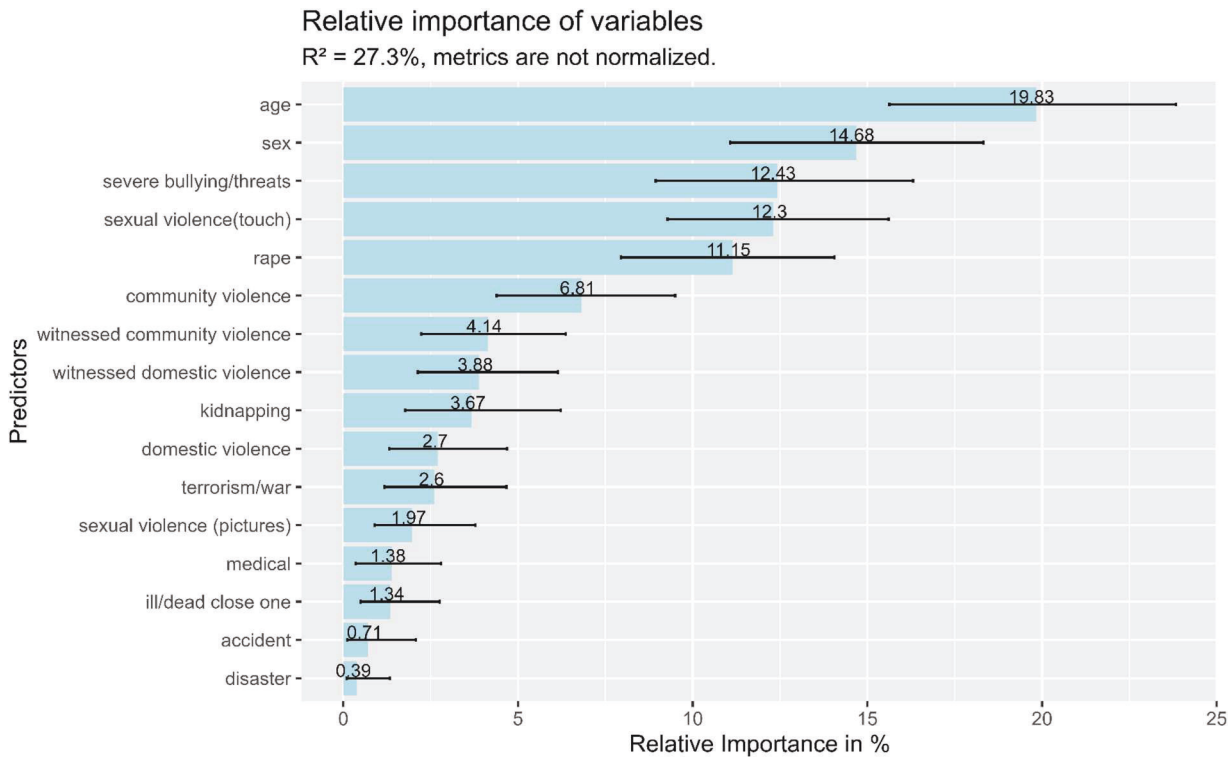

Figure 1. Norwegian sample: Relative importance of variables R^2 = 27.3%, metrics are not normalized.

bullying, $n = 1088$ (57.4%) showed clinically elevated PTSD symptoms. Bullying ($r = .23$, $p < .001$) showed a significant positive correlation with PTSS. The Breusch–Pagan test yielded a significant result ($\chi^2 = 45.935$, $p < .001$) implying heteroscedasticity of the residuals for the multiple regression analyses. The plot of the residuals against the fitted values can be found in the appendix. The variance inflation factor (VIF) did not exceed 1.6, therefore remained beneath the recommended cutoff of 5, hence no multicollinearity was present. Comparing the regression models with and without constraint, the model without constraint ($F(16,3353) = 78.82$, $p < .001$, $R^2 = 0.27$) had a significantly better fit than the constraint model ($F(2,3367) = 315.00$, $p < .001$, $R^2 = 0.16$) ($p < .001$), indicating a differential importance of various PTEs in predicting PTSS. Figure 1 presents the relative importance values for each predictor with the respective 95% CI. Predictors are ordered regarding their relative importance. In this sample, sex and age showed the highest relative importance. Bullying showed comparable relative importance with sexual abuse and physical violence, and higher relative importance than compared to all other traumatic events. A table containing the exact values can be found in the appendix.

3.2. Dutch sample

The sample had a mean age of 15.57 (SE: 3.19; range 7–20), with 68.7% being female and 31.3% male. The mode of potential traumatic events experienced was 1 (17.5%) and the mean CATS-2 sum score was 26.49 (SE = 12.36). Detailed sample characteristics with the PTEs listed regarding their frequencies can be seen in Table 2. Of the $n = 506$ (53.2%) who reported bullying, $n = 307$ (73.1%) showed clinically elevated PTSD symptoms, and bullying ($r = .17$, $p < .001$) showed a significant positive correlation with PTSS. The Breusch–

Table 2. Dutch sample $N = 952$.

	N/M	*%/SE*	*r with PTSS*	*% PTSD**
Number of PTEs	4.41			
Severe accident	145	15.2	.06	69.0
Explosion or fire	65	6.8	.05	72.3
Shooting	45	4.7	.03	75.6
War or unsafe neighbourhood	72	7.6	.10	80.6
Violence	456	47.9	.26	75.2
Domestic violence	504	52.9	.26	77.2
Severe fights in the family	335	35.2	.25	79.1
Out of house placement	209	22.0	.00	65.6
Sexual abuse or unwanted (sexual) touch	385	40.4	.33	84.9
Forced to touch or to do (sexual) things	163	17.1	.25	87.7
Threat of sexual abuse	170	17.9	.23	84.7
Not enough water food or clothing	93	9.8	.11	79.6
Left alone without an adult taking care	115	12.1	.10	78.3
Medical or life threatening disease (yourself or others)	79	8.3	.03	68.4
Someone close dying (suddenly)	446	46.8	.07	69.1
Bullying	506	53.2	.17	73.1
Racism	119	12.5	.12	78.2
Something else	235	24.7	.02	68.5
Cannot/ don't want to say	53	5.6	.07	75.5
CATS-2 DSM-5 total score	26.5	12.36		
CATS-2 ≥ 21	632	66.3		

* The percentage of children that have a sumscore ≥ 25, indicating most likely a PTSD classification.

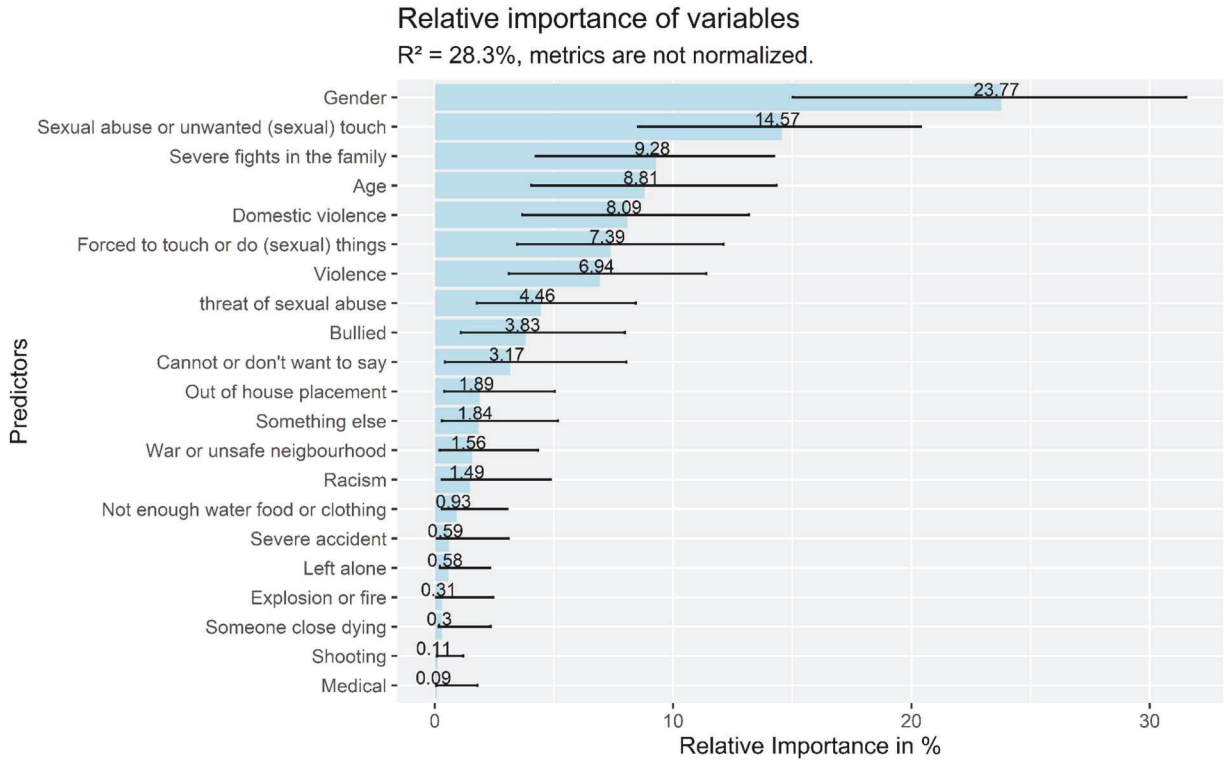

Figure 2. Dutch sample: Relative importance of variables R^2 = 28.3%, metrics are not normalized.

Pagan test yielded a non-significant result ($\chi^2 = 18.53$, $p = .62$) implying homoscedasticity of the residuals for the multiple regression analyses. The plot of the residuals against the fitted values can be found in the appendix. The variance inflation factor (VIF) did not exceed 1.5; therefore, it remains beneath the recommended cutoff of 5; hence, no multicollinearity was present. Comparing the regression models with and without constraint, the model without constraint ($F(15,691) = 22.9$, $p < .001$, $R^2 = 0.33$) had a significantly better fit ($F(13,704) = 11.66$, $p < .001$) than the constraint model ($F(2,704) = 34.91$, $p < .001$, $R^2 = 0.09$) indicating a differential importance of different PTEs in predicting PTSS. Figure 2 presents the relative importance values for each predictor with the respective 95% CI. Predictors are ordered regarding their relative importance. A table containing the exact values can be found in the appendix.

Table 3. German sample $N = 707$.

	N/M	*%/SE*	*r with PTSS*	*% PTSD**
Number of PTEs	3.52			
Serious natural disaster	90	12.7	.04	52.2
Serious accident or injury	281	39.7	.00	49.1
Threatened, hit or hurt badly in family	218	30.8	.26	67.4
Threatened, hit or hurt badly in school/ community	245	34.7	.28	65.3
Attacked, Stabbed, shot at or robbed by threat	46	6.5	.09	63.0
Seeing someone in family threatened, hit or hurt badly	240	33.9	.25	63.3
Seeing someone in the community threatened, hit or hurt badly.	229	32.4	.20	60.7
Forced to do sexual things	169	23.9	.34	73.5
Forced to do sexual things online	115	16.3	.29	75.7
Bullying in person	372	52.6	.38	64.0
Bullying online	120	17.0	.36	78.3
Someone close dying suddenly or violently	235	33.2	.07	54.9
Stressful or scary medical procedure	129	18.2	.07	60.5
CATS-2 DSM-5 total score	24.77	13.12		
CATS-2 ≥ 21	352	49.92		

* The percentage of children that has a sumscore ≥ 25, indicating most likely a PTSD classification.

3.3. German sample

The sample had a mean age of 13.25 ($SE = 3.047$, range 7–18) and 39.0% being female, 58.7% male, and 2.3% with diverse gender identity. The mode of PTEs experienced was 2 (19.4%) and the mean CATS-2 sum score was 24.77 (SE: 13.12). Detailed sample characteristics with the PTEs listed regarding their frequencies can be seen in Table 3. Of the $n = 372$ (52.6%) who reported bullying, $n = 238$ (63.97%) showed clinically elevated PTSD symptoms, and among the $n = 120$ (17.0%) who reported cyberbullying, $n = 94$ (78.33%) showed clinically elevated PTSS. Bullying ($r = .37$, $p < .001$) and cyberbullying ($r = .36$, $p < .001$) showed a significant positive correlation with PTSS.

The Breusch–Pagan test yielded a non-significant result ($\chi^2 = 19.71$, $p = .183$), implying homoscedasticity of the residuals for the multiple regression analyses. The plot of the residuals against the fitted values can be found in the appendix. The variance inflation factor (VIF) did not exceed 1.5, and therefore

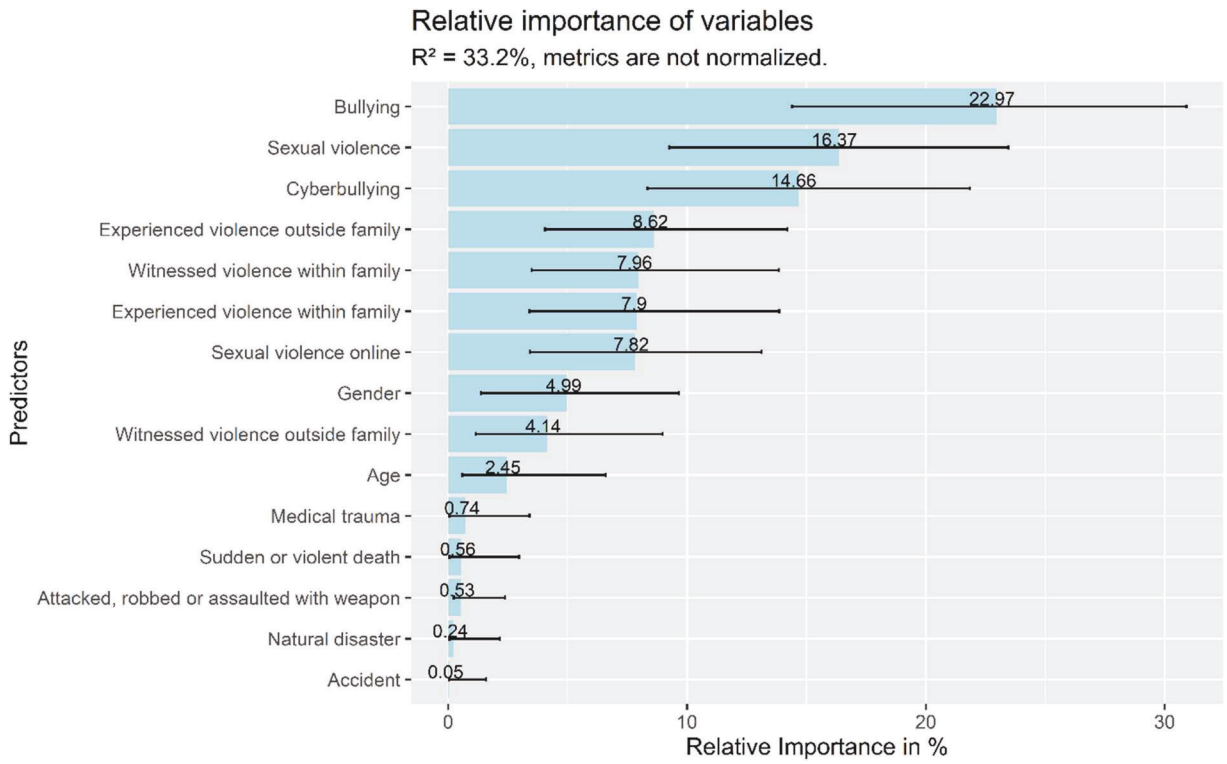

Figure 3. German sample: Relative importance of variables R^2 = 33.2%, metrics are not normalized.

remains beneath the recommended cutoff of 5; hence, no multicollinearity was present. Comparing the regression models with and without constraint, the model without constraint ($F(15,691) = 22.9$, $p < .001$, $R^2 = 0.33$) had a significantly better fit ($F(13,704) = 11.66$, $p < .001$) than the constraint model ($F(2,704) = 34.91$, $p < .001$, $R^2 = 0.09$), indicating a differential importance of different PTEs in predicting PTSS. Figure 3 presents the relative importance values for each predictor with the respective 95% confidence intervals (CI). Predictors are ordered regarding their relative importance. Bullying and cyberbullying showed comparable relative importance with sexual abuse and physical violence, and higher relative importance compared to all other traumatic events. A table containing the exact values can be found in the appendix.

4. Discussion

This study constitutes one of the first international multi-sample clinical investigations examining the association between bullying experiences and child PTSS in clinical populations of children and adolescents referred to child and adolescent psychiatric centres. In all three of our samples, children and adolescent exposed to bullying report clinically elevated PTSS ranging from 57.4%−73.1%, with small to moderate correlations between bullying and PTSS from r = .17 to .37 indicating that there is a significant association between bullying and PTSS, as also reported in other studies (Miller et al., 2024; Nielsen et al., 2015; Xu et al., 2023). As lifetime poly-victimization has shown to predict later bullying victimization via internalizing problems (Wiemann et al., 2023), it remains unclear if this bullying – PTSS association is mainly driven by pre-existing traumatic events and not by the bullying experience itself. Regarding this claim, our study demonstrated that in three independent trauma-exposed clinical samples bullying was associated with PTSS, even after controlling for age, gender and other PTEs according to DSM-5. The three samples comprised mainly the same instrument (CATS and CATS-2) but used varying formulations of the item to assess bullying, ranging from *I have been bullied* in the Dutch sample without any further specification, to *Severe bullying or threats* in the Norwegian sample, indicating that bullying must have been experienced as severe or threat-related, to *Someone bullying me in person. Saying very mean things that scare me* in the German sample, indicating that bullying must have a threat-related component. In summary, bullying was associated with PTSS after controlling for the experience of PTEs in all three samples; however, clear differences in strength of this association emerged between samples. Both Norwegian and German samples show a much stronger association between bullying and PTSS compared to the Dutch sample. Inspecting the different formulations, it is apparent that both Germany and Norway have formulated bullying more as a threat or fear towards the physical or emotional integrity of a victim, whereas in the Dutch questionnaire it is described as a broader concept of bullying. The Dutch sample also

shows the highest prevalence of bullying, which is possibly due to this broader definition of bullying. Therefore, it could be argued that the German and Norwegian children who endorsed bullying perceived the bullying as more severe, resulting in higher levels of and higher associations with PTSS in these two samples. This pattern underscores the conceptual ambiguity of bullying, especially in the trauma research where the assessment of bullying is often less specific than in dedicated bullying instruments (Idsoe et al., 2021). While a broader formulation of the concept of bullying may limit precision in the assessment, it aligns with the purpose of trauma screenings, which prioritize sensitivity to a wide range of potentially threatening experiences over specificity.

In all samples, it is seen that bullying and interpersonal PTEs, such as sexual abuse and domestic violence, explain most variance in PTSS after controlling for each other, with bullying explaining larger amounts of variance compared with A-criterion non-interpersonal PTEs (accidents, natural catastrophes, medical trauma). This makes sense, as bullying cannot be escaped by the child since it frequently occurs in school environments and at any time through social media. This constant exposure can leave them with no relief, impacting them during a critical stage of social and cognitive development. The (repeated) exposure can lead to more perseverant traumatic stress, such as a profound sense of fear, helplessness, and chronic stress, and could affect the healthy development of a child or accelerate the PTSS caused by other PTEs dramatically. The lasting effects of bullying can severely harm a child's self-esteem, sense of safety, and ability to form healthy relationships (Agustiningsih et al., 2024; Bryson et al., 2021; Reijntjes et al., 2010). In addition, the inherent humiliation and rejection involved in bullying can be experienced as a threat to the social integrity and sense of belonging (Neuner, 2023), triggering emotional responses such as social defeat and despair. Within associative threat structures, these emotions become linked to specific aspects of the bullying experience and can be reactivated in future social situations. From a developmental perspective, the reactivation of such experiences makes bullying particularly harmful, as it disrupts important developmental tasks such as forming peer relationships and developing a self-concept (Bäker et al., 2023; Cheng et al., 2025). This is particularly relevant for older children and adolescents, who seek autonomy from adults and spend more time with peers in order to experience accepting friendships characterized by intimacy, trust, reciprocity, and affection (Veenstra & Laninga-Wijnen, 2023). A developmental perspective emphasizes that the potential impact of bullying cannot be fully understood without considering the changing emotional and social needs of children and adolescents. Experiencing social threats during this development may trigger psychological processes similar to those observed in the development of PTSD following physical or sexual trauma (Neuner, 2023). This perspective argues for a broader understanding that encompasses the psychological impact of social traumas like bullying, recognizing that the underlying mechanisms of trauma response may be comparable across different types of threatening experiences. Some scholars have been concerned that including new and less severe events into the trauma concept can lead to negative concept creep (Haslam & McGrath, 2020). Broadening concepts could lead to loss of precision because then the meaning of 'trauma' becomes vaguer, making it difficult to identify and address genuine traumatic experiences (Baes et al., 2023). Nevertheless, when the expansion of the concept is supported by findings such as those presented in this paper, the labelling of severe bullying with perceived threat as an actual potentially traumatic event may provide both the bullied children, adolescents, observers, and helpers with a tool to identify PTSD as a possible disorder developing after bullying.

In addition we found that over half of the participants in all national samples (Germany, Norway, and the Netherlands) reported experiencing bullying, with prevalence rates ranging from 52.6% to 56.2%. These findings highlight the substantial prevalence of bullying among clinical populations of children and adolescents, corroborating the results of recent studies that estimate bullying rates between 40 and -50% in mental health facilities or clinical psychiatric care, alongside an incidence of 19.8% to 21.8% for cyberbullying (Abregú-Crespo et al., 2024; Pfeiffer et al., 2024). In contrast, the prevalence of bullying in non-clinical samples is estimated to be approximately 33% to 36% and cyberbullying is estimated to affect 15% to 17% of the population (Eyuboglu et al., 2021; Gohal et al., 2023; Modecki et al., 2014).

4.1. Clinical implications

Given the high prevalence of bullying across all three clinical samples and its significant association with PTSS, even after controlling for other traumatic events, clinicians should routinely assess for bullying experiences when screening for potentially traumatic events. This includes not only physical bullying but also verbal bullying and cyberbullying. In both educational and clinical settings, professionals such as teachers, school counselors, and healthcare workers should be trained to identify potential triggers related to past bullying experiences to help reduce fear responses and support the child's emotional regulation (Idsoe et al., 2021). Given that bullying is a heterogeneous and layered construct, clinicians should

not only screen for its occurrence but also carefully assess its subjective severity, threat level, and emotional impact. In our study, formulations that included more explicit threat elements showed stronger associations with PTSS, underscoring the importance of clarifying whether the bullying experience involved perceived danger, helplessness, or persistent social threat. Furthermore, recognizing bullying-related stress can empower affected youth, reduce internalized stigma, and ensure they receive trauma-informed care – even when the experience does not meet strict DSM-5 A-criteria. Tailoring interventions to address bullying-related PTSS – including cyberbullying – and fostering collaboration with schools for safety planning and trigger management are essential components of effective support for the substantial number of children affected by bullying.

4.2. Strengths and limitations

This is the first cross-sectional international large-scale multi-sample study done on bullying and PTSS. A major strength of the study is the large power and replication within three independent samples controlling for the effect of other PTEs and using diverging formulations of the bullying concept. However, this may also be a limitation, as this could be the explanation for the diverging prevalence rates of bullying and the strength of the association with PTSS between samples. We used the translated words for bullying in German, Norwegian, and Dutch; however, children's perceptions of the word 'bullying' can vary significantly based on cultural, linguistic, and contextual factors. Perceptions of bullying may vary not only between countries but also within a single country, depending on factors such as educational context or school culture. To account for these potential differences, the CATS-2 was piloted with clinical populations, including face validity checks. In these settings, traumatized children, their caregivers and practitioners reviewed the language and essential meaning of the sentences. In these checks it appeared that the questions were understood and participants related to the concept of bullying as intended (Kooij et al., 2025; Sachser et al., 2022). Secondly, the assessments are conducted in specialized mental health facilities. Children in these facilities often have a longer history of traumatic experiences that goes beyond bullying (Agustiningsih et al., 2024; Crosby et al., 2010; Idsoe et al., 2012) and it is unclear whether our results are generalizable to non-clinical samples. Future research should strengthen the understanding of the association between bullying and PTSS by including non-clinical samples as a comparison group. Third, conducting separate analyses for children and adolescents could provide deeper insights, as experiences and perceptions of bullying may vary significantly between these age groups. Lastly, an important limitation of the present study is the lack of differentiation between types of bullying such as cyber-, relational-, sexual-, prejudicial-, verbal- of physical bullying. The lack of explicit specification of bullying types limits the ability to examine whether certain forms are more strongly associated with PTSS than others. Given the increasing role of digital communication and the growing importance of social relationships through social media, cyberbullying, in particular, may play a prominent role. In future studies, it is important to distinguish different types of bullying and focus on threat-related and non-threat-related formulations, so that more light can be shed on the development of PTSS after the different types or subjective experiences of bullying.

4.3. Conclusion

While bullying was questioned to constitute a traumatic event in the past, in our study bullying has been identified as one of the core events contributing to the development or maintenance of PTSD, in conjunction with exposure to other PTEs. This effect may be stronger when bullying is perceived as threatening for the child, activating the fear network. Recognizing bullying as a potential source of PTSS underscores the importance of addressing it seriously in both educational and clinical mental health contexts. We recommend expanding diagnostic options beyond the traumatic event definitions and focusing on treating the symptoms observed in children.

Disclosure statement

No potential conflict of interest was reported by the author(s).

Data availability statement

Data that support the findings of this study are available from the corresponding authors, LHK and CS, upon reasonable request.

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