

The influence of social support on posttraumatic stress symptoms among children and adolescents: a scoping review and meta-analysis

Ting Xiong ^a, Athena Milios ^b, Patrick J McGrath ^{a,c} and Elisa Kaltenbach ^c

^aDepartment of Psychiatry, Dalhousie University, Halifax, Nova Scotia, Canada; ^bCollege of Pharmacy, Dalhousie University, Halifax, Nova Scotia, Canada; ^cCentre for Research in Family Health, IWK Health Centre, Halifax, Nova Scotia, Canada

ABSTRACT

Background: Several risk and protective factors play a role in the development of posttraumatic stress symptoms (PTSS) in children and youth. The evidence for social support (SS) as a protective factor is rising; however, a review of the evidence is lacking.

Objective: This scoping review and meta-analysis aims to map out and synthesize the present research on the influence of social support on PTSS in children and adolescents.

Method: The literature searched through PubMed, MEDLINE, Embase, PsycInfo, and CINAHL identified 3629 abstracts. Ninety articles published from 1999 to 2020 were selected, including a total of 77,439 participants.

Results: Most papers focused on social and emotional support from family members (36/88) and peers (26/88); other types of support (e.g., informational support and support from professionals) were not widely reported. The cross-sectional studies illustrated an overall significant, but weak, negative correlation between global social support and PTSS. A similar weak negative association was found between family support and PTSS. The association between peer support and PTSS was not significant. For longitudinal studies, 4 of 5 indicated that SS was a significant negative predictor of PTSS.

Conclusions: There was conceptual, methodological, and statistical heterogeneity of the identified studies. This review suggests a weak negative relationship between global SS and PTSS in children and adolescents. Higher global SS was related to less PTSS. The evidence regarding family support revealed a more stable negative relationship with PTSS than that for peer support. Investigating social support without specifying the form of support confounds the effect. Studies on informational, teacher, or professional support seem to be lacking. More studies are needed on the longitudinal effects of SS on PTSS.

La influencia del apoyo social en los síntomas de estrés postraumático en niños y adolescentes: revisión de alcance y metanálisis

Antecedentes: Varios factores de riesgo y de protección influyen en el desarrollo de síntomas de estrés postraumático (SEPT) en niños y jóvenes. La evidencia del apoyo social (AS) como factor protector está aumentando; sin embargo, falta una revisión de la evidencia.

Objetivo: Esta revisión de alcance y metaanálisis tiene como objetivo mapear y sintetizar la investigación actual sobre la influencia del apoyo social en el SEPT en niños y adolescentes.

Método: La literatura buscada a través de PubMed, MEDLINE, Embase, PsycInfo y CINAHL identificó 3629 resúmenes. Fueron seleccionados Noventa artículos publicados entre 1999 y 2020, incluyendo un total de 77.439 participantes.

Resultados: La mayoría de los artículos se centraron en el apoyo social y emocional de los miembros de la familia (36/88) y compañeros (26/88); otros tipos de apoyo (por ejemplo, apoyo informativo y apoyo de profesionales) no se informaron ampliamente. Los estudios transversales ilustraron una correlación negativa global significativa, pero débil, entre el apoyo social global y SEPT (coeficiente de correlación agrupado $r = -.09, p < .01$). Una débil asociación negativa similar se encontró entre el apoyo familiar y los SEPT (agrupado $r = -.12, p < .005$). La asociación entre el apoyo de los compañeros y los SEPT no fue significativa, $r = -.08, p = .143$. Para estudios longitudinales, 4 de 5 indicaron que AS era un predictor negativo significativo de SEPT (rango de tamaño de efecto beta = $[-.32, -.21]$).

Conclusiones: Hubo heterogeneidad conceptual, metodológica y estadística de los estudios identificados. Esta revisión sugiere una débil relación negativa entre AS global y SEPT en niños y adolescentes. Un AS global más alto se relacionó con menos SEPT. La evidencia con respecto al apoyo familiar reveló una relación negativa más estable con SEPT que la del apoyo de pares. Investigar el apoyo social sin especificar la forma de apoyo confunde el efecto. Estudios de apoyo informativo, docente o profesional parecen faltar. Se necesitan más estudios sobre los efectos longitudinales de AS en SEPT.

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关键词

社会支持; 创伤后应激症状; 儿童; 青少年; 综述; 家庭; 同伴

HIGHLIGHTS

- This study aims to review current knowledge on the influence of SS on children and adolescents with traumatic experiences and/or posttraumatic stress symptoms (PTSS).
- A systematic search strategy identified 3629 abstracts, among which 90 quantitative articles were selected.
- Our review found that there was a weak negative relationship between global SS and PTSS in children and adolescents and that family support showed a more robust protective effect than peer support.

儿童和青少年中社会支持对创伤后应激症状的影响; 范围 综述和元分析

背景: 一些风险和保护因素在儿童和青少年创伤后应激症状 (PTSS) 的发展中发挥作用。社会支持 (SS) 作为保护因素的证据正在增加; 然而, 缺乏对证据的综述。

目的: 本范围综述和元分析旨在描绘和综合目前关于儿童和青少年中社会支持对PTSS 影响的研究。

方法: 通过 PubMed, MEDLINE, Embase, PsycInfo 和 CINAHL 检索文献, 确定了 3629 篇摘要。选择了 1999 年至 2020 年间发表的 90 篇文章, 共有 77,439 名参与者。

结果: 大多数论文关注来自家庭成员 (36/88) 和同龄人 (26/88) 的社会和情感支持; 其他类型的支持 (例如, 信息支持和专业人员的支持) 没有得到广泛报道。横断面研究表明, 总体社会支持与 PTSS 之间存在整体显著但微弱的负相关 (合并相关系数 $r = -.09, p < .01$)。在家人支持和 PTSS 之间发现了类似的弱负相关 (汇总 $r = -.12, p < .005$)。同伴支持与 PTSS 之间的关联不显著, $r = -.08, p = .143$ 。对于纵向研究, 5 项中有 4 项表明 SS 是 PTSS 的显著负性预测因素 (效应量范围 $\beta = [-.32, -.21]$)。

结论: 确定的研究存在概念, 方法和统计异质性。本综述表明儿童和青少年的总体 SS 和 PTSS 之间存在弱的负相关关系。较高的总体 SS 与较少的 PTSS 相关。关于家人支持的证据表明其 PTSS 的负相关关系比同伴支持更稳定。在没有明确支持形式的情况下调查社会支持会混淆效应。似乎缺乏对信息, 教师或专业人员支持的研究。需要更多关于 SS 对 PTSS 纵向影响的研究。

1. Background

Childhood exposure to traumatic life events has been an important public health and social problem reported by the World Health Organization (Gilbert et al., 2009). Approximately 15% to 43% of children and adolescents worldwide experience at least one traumatic event in their childhood or adolescence (Hamblen & Barnett, 2014). The early exposure can cause significant immediate and long-term consequences on children's physical and mental health (Briere, Kaltman, & Green, 2008; Dyregrov & Yule, 2006; Nemeroff, 2004). Traumatic experiences in childhood and adolescence are furthermore associated with a higher likelihood of mental health disorders in adults such as psychosis, schizophrenia, personality disorders, and posttraumatic stress disorder (PTSD) (Li et al., 2014; Read, Van Os, Morrison, & Ross, 2005). The prevalence of PTSD in children and adolescents is 7–8% (Lewis et al., 2019). For children and adolescents with trauma exposure, the estimated rate of PTSD is as high as 15.9% (Alisic et al., 2014).

There are several risk or protective factors that influence the development as well as the course of PTSS in children and adolescents. Lewis et al. reviewed the literature and surveyed a population-representative birth-cohort of 2232 children born in England and Wales in 1994–95 (Lewis et al., 2019). The risk profile they developed for PTSS included: (1) child characteristics such as female sex, (2) part of a minority ethnicity, (3) lower Child IQ, (4) internalizing symptoms of the child, (5) externalizing symptoms of the child, (6) psychotic symptoms of the child, (7) victimization of the child, and (8) accident involving the child. The family characteristics included: (1) socioeconomic disadvantage, (2) less than two biological parents at home, and (3) family history of mental illness.

Many observational studies on PTSS found that social support (SS) also has the potential to buffer the impacts of psychological trauma (Evans, Steel, & DiLillo, 2013; Glass, Perrin, Campbell, & Soeken, 2007; Hébert et al.,

2014). A meta-analysis, a decade ago, examining risk factors for PTSS in children and adolescents (Trickey, Siddaway, Meiser-Stedman, Serpell, & Field, 2012) identified lower social support as a risk factor for PTSS in the aftermath of traumatic exposure for youth, reporting a medium to large effect size. However, findings are inconsistent with some studies showing no effect of social support on PTSS (Affrunti, Suárez, & Simpson, 2018; Bal, Crombez, Van Oost, & Debourdeaudhuij, 2003; Deane et al., 2018). Additionally, previous studies employed SS as an umbrella term. Social support is such a broad concept that the particular function of different types of support may have been neglected. For example, Chu and colleagues found in their meta-analysis that supports from teachers and school personnel were stronger correlates with well-being than family and peer support (Sen, Saucier, & Hafner, 2010). Individual sources (e.g. family, friends, colleagues, professionals, etc.) and the category of social support (*i.e.* emotional, instrumental, and informational support) may have different effects on PTSS (Berthold, 2000; Pina et al., 2008). Emotional support is about listening when one is sharing one's feelings (Hill, 2016; Li et al., 2014). Informational support is provided when others share facts or knowledge helping to tackle the recipient's challenges. Instrumental support is helping others by providing financial resources, political assistance, and physical resources (Heaney & Israel, 2008; Hill, 2016; Li et al., 2014).

The heterogeneity of findings and poor specification in the definition of social support suggest that a more thorough investigation is needed to construct a comprehensive model of social support on PTSS. This scoping review and meta analysis was designed to investigate the levels of social support for children and adolescents with PTSS or trauma exposure and their association with the severity of PTSS. The scoping review framework was used because the body of literature on the association between social support and PTSS among children and adolescents was not clear. A scoping review would help to identify

relevant evidence and clarify the social support concept in the field. A meta-analysis was also conducted for the research questions that yielded sufficient and relatively comparable statistics.

We aimed to extend the existing knowledge for different subtypes of social support and its specific influence on the prevention or moderation of PTSS in children and adolescents. We aimed to map the present evidence of the research on social support in children and adolescents with trauma exposure. The specific questions were:

(1) What is known from the existing literature about the role of social support in the development of PTSS in children or adolescents?

(2) Is social support a protective factor in the development and course of PTSS?

(3) Which sources and types of social support show associations in mitigating PTSS?

(4) Do studies from different subpopulations show similar effects of SS on PTSS?

2. Methods

2.1. Identifying relevant studies

We used the widely used framework of Arksey and O'Malley (2005) to conduct the review study. The search strategy was developed in consultation with a librarian. The librarian was instrumental in generating, modifying, and applying search terms to optimize study identification in the relevant bibliographic databases. Several rounds of preliminary search were conducted by the librarian as well as the research team to identify and refine key search terms. Search terms and subject headings were generated and combined during the search process, based on three key concepts: posttraumatic stress disorder, social support, and population (i.e. adolescents/children). Specific terms searched in each database are available in the Additional File 1 (online supplementary data). The databases utilized were PubMed, MEDLINE, Embase, PsycInfo, and CINAHL. In November 2019, we searched for peer-reviewed papers published in English in the last two decades (1999–2019). In the initial identification stage, 3054 abstracts were included after removing duplicates. Automatic alerts of new articles derived from the established searching terms were sent to, screened by, and added by the first author (TX) for each of the databases between December 2019 and May 2020.

2.2. Study selection

Cochrane Covidence was used to systematically screen studies (Veritas Health Innovation Australia). Inclusion criteria were articles: (1) published from 1999 to 2020, (2) written in English, (3) including participants between 6 and 18 years old (i.e. participants' average age ranges from 6 to 18), (4) reporting quantitative results of PTSS

and level of social support. Quantitative results of PTSS include: (1) clinical assessment of posttraumatic stress symptoms performed by clinicians/health professionals or researchers, and/or (2) posttraumatic stress symptoms measured by self-reported PTSS instruments. In the case where a study includes both adolescents as well as adults, we included it if the average age of the study sample was equal to or below 18. A publication was excluded if: (1) it was not a full report on a research study (i.e. an editorial, a letter, a conference abstract), (2) it was a review paper, (3) it was a study protocol, (4) an organic disease (e.g. cancer or HIV) was identified by the authors as the primary health condition of the population in the study; (5) the average age of participants was over 18 years, and/or (6) the outcome was not reported (i.e. no outcome of social support and/or PTSS). For the exclusion criteria (4), trauma history of physical injury, medical treatment or hospital admission was not classified as an organic disease being the primary health outcome and, therefore would not be the reason for being excluded. Studies that did not meet all of the inclusion criteria or met any of the exclusion criteria were excluded from data extraction.

The selection of studies involved two consecutive steps: abstract screening and full-text screening. One hundred and sixty-eight publications met our criteria and subsequently entered full-text screening. First, two independent reviewers (TX and AM) screened titles and abstracts and determined eligibility based on the inclusion and exclusion criteria. Eligible articles then entered the pool for the next step where full texts were reviewed and the decision of acceptance and rejection for data charting was made by the two independent reviewers. The final decision was made after a discussion between the reviewers. For both steps, whenever disagreement arose, a third party was consulted (PM). Finally, 85 articles were included during this stage. 83 articles were excluded with specific reasons shown in See Figure 1 for a description of the selection process (Moher, Liberati, Tetzlaff, Altman, & Group, 2009). The follow-up from database alerts identified 575 new articles; five of those were included in the review.

2.3. Charting data and summarizing results

A coding manual, available in the Additional File 2 (online supplementary data), was developed to extract data from the study under the guideline of the PRISMA framework for scoping reviews (Tricco et al., 2018). The PRISMA checklist was used to summarize each report section, see the Additional File 4(online supplementary data). We also followed the Population, Intervention, Comparison, Outcome (PICO) strategy for reporting systematic reviews. Data related to research questions and useful for information interpretation was extracted and recorded in a code form, consisting of publication information (e.g. title, year of publication, country), methodological features (e.g. sample size, study design,

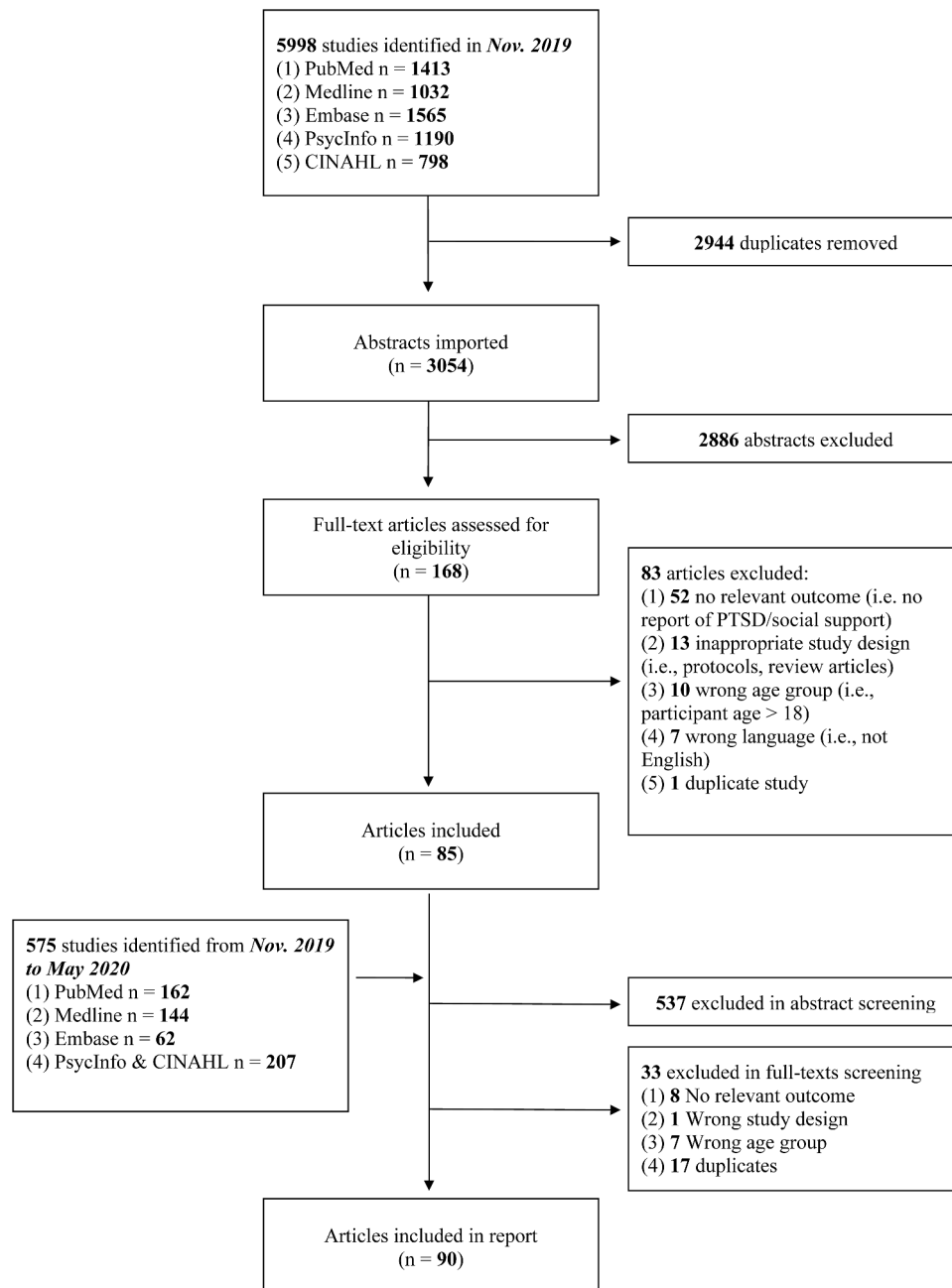


Figure 1. PRISMA flow diagram about the screening process. Adapted from: Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. *PLoS Med* 6(6): e1000097. doi:10.1371/journal.pmed1000097.

design of comparison, age, and gender of participants), measurement of social support (e.g. type of support, questionnaire being used, time of measurement, administration, scoring information), measurement of PTSS (e.g. questionnaire, administration, time of measurement, and traumatic events reported in the population), and major outcome (e.g. level of support, the association between SS and PTSS, and effect size). For all the reviewed studies, a higher score for a measure indicates a higher level of the factor being measured; for example, a negative effect size between social support and PTSS means higher social support was correlated to lower levels of PTSS. Data related to our primary and secondary questions is included in [Tables 1–3](#).

We summarized outcomes in terms of the type of support, type of association, and outcome (i.e. significant or not significant) by study designs (i.e. a cross-sectional study, a longitudinal study, and an interventional study). Different terms that were used to describe social support, such as tangible support (e.g. study ID 52, 64), received support (e.g. study ID 67, 72, 77), perceived support (e.g. study ID 2, 12, 15), social interaction (e.g. study ID 64), availability of support (e.g. study ID 3, 5), satisfaction with social support (e.g. study ID 4, 16, 59) were summarized with the term ‘global social support’ or ‘global support’ in this study.

A meta-analysis could only be performed for the questions that yielded relatively comparable studies

Table 1. Characteristics of studies.

	<i>N</i> _{studies}	% ¹	<i>N</i> _{participants}
Publication year, <i>N</i> = 91			
1999–2005	9	9.9%	2584
2006–2010	19	20.9%	8990
2011–2015	31	34.1%	34,648
2016–2020	32	35.2%	31,217
Region of study, <i>N</i> = 90			
North America	34	37.8%	20,787
Asia	35	38.9%	44,322
Europe	15	16.7%	10,117
Africa	3	3.3%	1008
Others	3	3.3%	1108
Sample size, <i>N</i> = 90			
<100	12	13.3%	914
100–1000	61	67.8%	25,043
>1000	17	18.9%	51,482
Study design, <i>N</i> = 91			
Cross-sectional	70	76.9%	68,855
Cohort/longitudinal	21	23.1%	8584
Mean Age, years, <i>N</i> = 84			
[6, 12]	18	21.4%	4201
[12–18] ²	66	78.6%	61,479
Gender (Female), %	-	56%	-
Traumatic events, <i>N</i> = 91			
Natural disaster	40	44.0%	39,205
Violence, abuse and maltreatment	19	20.9%	6834
Multiple	17	18.7%	23,638
War and political conflicts	11	12.1%	3824
Other	4	4.4%	3938
Source of support, <i>N</i> = 88			
Multiple	50	56.8%	44,317
Family	36	40.9%	25,626
Peer	26	29.5%	2935
Professional	10	11.4%	4547
Other	11	12.5%	7567
Support Relevance, <i>N</i> = 91			
Social support related to traumatic events	4	4.4%	3597
Global social support	87	95.6%	73,842

¹% refers to percentage of studies in the classified group.

²The parenthesis ')' is a non-inclusive mark and the square brackets '[' and ']' are inclusive marks. This means the studies that reported a mean age of 12.00 were classified in the group [12, 18], not the group [6, 12].

(e.g. the same type of coefficient reported as effect size, similar study design, comparable type of social support). Accordingly, meta-analyses were conducted for: (1) correlation between global support and PTSS in cross-sectional studies; (2) correlation between family support and PTSS in cross-sectional studies; (3) correlation between peer support and PTSS in cross-sectional studies; (4) correlation between global support and PTSS in the adolescent group (i.e. participants on average aged 12–18); (5) correlation between global support and PTSS in participants with trauma exposure 'natural disaster'; (6) correlation between global support and PTSS in participants with trauma exposure 'violence, abuse, and maltreatment'. We did not conduct a statistical synthesis of effect sizes for the remaining questions due to the heterogeneity of studies and the scarcity of studies in the subgroups. Studies that did not report their sample sizes did not enter the meta-analyses. For the studies that sampled multiple groups or assessed multiple aspects on the analysed question, separate effect sizes with their corresponding sample sizes were analysed. An example would be study ID 54 which assessed and reported support from mothers as well as fathers. The two effect

sizes were both included in the analysis of the family support related question.

Correlation coefficients and 95% confidence intervals (CI) were calculated for the data extracted from each study for the research question. The pooled effect size, *r*, was used as the summary statistic. We used a random-effect model to calculate the pooled effect sizes, Laird Q statistic and *I*² statistic (Takkouche, Cadarso-Suárez, & Spiegelman, 1999) to test and report homogeneity and significance. The meta-analysis was conducted through the 'metafor' (Viechtbauer & Cheung, 2010) and 'robmeta' package (Fisher, Tipton, Zhipeng, & Fisher, 2017) for R.

Critical appraisal of the studies was conducted using the Joanna Briggs Institute (JBI) Critical Appraisal Checklist for Analytical Cross-Sectional Studies and JBI Critical Appraisal Checklist for Cohort Studies (Moola et al., 2019). Only relevant items of the checklists were reported in the current paper. All the assessment questions used in the current review are available in Additional File 5 (online supplementary data). The assessment tool for cross-sectional studies asks for criteria clarity, description for the study setting, reliability of the measure for social support, the measure of confounding factors, reliability of the measure for PTSS, and appropriateness of the data analysis method. The appraisal tool for longitudinal studies focused on the reliability of the measure for social support, identification of confounding factors, strategies to address confounding factors, reliability of the measure for PTSS, the sufficiency of follow-up time, clarity of sample loss in the follow-up assessment, strategies to address sample loss in the follow-up assessment, appropriateness of the data analysis method. The assessment of study quality was pilot tested by two independent reviewers (TX and AM) for 25 studies. The results from the reviewers were compared and any conflict was calculated and discussed thoroughly. During this initial pilot, 10 out of 209 (4.78%) records received different scores from the two reviewers. Then a second subset of 25 studies was reviewed by the two reviewers to promote consistent and reliable evaluation.

3. Results

3.1. Demographics and study characteristics

A total of 90 papers (91 studies with 77,439 participants) published in the last two decades (1999–2020) met the inclusion criteria. Studies that did not report relevant information on a specific research question were not summarized in the corresponding section or tables. The characteristics of the studies are presented in Table 1. The majority of studies (63/91, 69.23%) were published in the last decade (2011–2020); they had larger sample sizes than studies from the previous decade. The average sample size was 1118 and 976 for the years 2011 to 2015 and 2016 to 2020. Most of the studies were large with 61

Table 2. Summary of cross-sectional studies.

Study ID & Reference ^d	Sample size	Type of social support	Measure of PTSD	Level of social support	PTSD score, M (range of possible score) ^e OR (rate of PTSD diagnosis/%) ^d	Type of traumatic event	Major results ^c
1. Affrunti et al. (2018)	96	Support from parents and friends	CBCL – PTSD subscale	peer support 58.59 (23–72); Parent Support 54.63 (28–73)	65.33 (50–89) ⁵	Community violence	Correlation friend support –0.08, parent support 0.04; prediction friend support beta = –0.22, parent support beta = 0.06; moderation primary exposure x friend support beta = –0.37*, primary exposure x parent support beta = 0.04, secondary exposure X friend support beta = 0.01, secondary exposure X parent support beta = –0.02
2. Aydin et al. (2016)	182	Perceived support from families, friends, and teachers	CPTS-RI	NR	NR	Sexual abuse	Correlation Overall support r = –0.27****, Family support r = –0.27****, Peer support r = –0.11; Teacher support r = –0.21**, odds ratio family support 0.93*, peer support 1.02, teacher support 1.00 Correlation r = –0.1
3. Bal et al. (2009)	100	Received social support after a traumatic experience	TSSC	32.47 (7–49)	14.93 (0–30) ⁵	Sexual abuse	Correlation r = –0.1
4. Bal et al. (2003)	820	Received support from family and friends; satisfaction of support	TSSC; CAPS-C	family 11.7 (6–36); friends (6–36)	9.4 (0–30) ⁵	Multiple	Prediction difference of PTS scores on high family support group and low family support group ***, difference of PTS scores on high friend support group and low friend support group NS
6 (Banks & Weems 2014)-Study 1	1098	Family support and peer support	Modified PTSD-RI	Peer support 3.12 (0–4); Family support 3.07 (0–4)	19.08 (0–80) ⁵	Sexual abuse	Correlation Peer support r = –.30**, family support r = –.10**, Prediction Peer support beta = –0.29**, family support beta <0.1; Moderation peer support X exposure beta = .04, family support X exposure beta <0.1 Prediction beta = –.120
8 (Beeri & Lev-Wiesel 2012)	511	Global social support	PTSD Symptom Checklist for DSM-III-R	NR	Trauma exposed group 22.86 (0–44) ⁵ , (46.3%) ^b ; comparison group 16.64 (0–44) ⁵ , (18.5%) ^b	Hurricane	Prediction beta = –.120
9 (Bernard-Bonnin et al. 2008)	134	Sibling support, peer support and family support	CRIES	NR	Experiment group 22.86 (0–44) ⁵ , (46.3%) ^b ; comparison group 16.64 (0–44) ⁵ , (18.5%) ^b	Child sexual abuse	Prediction beta = –.16*
10 (Bokszczanin 2008)	533	Parental Support	Revised Mississippi PTSD Scale	NR	NR	Hurricane	Correlation r = –0.28***, prediction beta = –0.11**, moderation (trauma exposure X parental support-> PTSD) beta = –0.03 Correlation r = –0.118*
11 (Bountress et al. 2017) ^a	332	Emotional support from family and children	NSA	1.13 (0–2)	NR	Tornado	Correlation r = –0.118*
12 (Bruwer et al. 2008)	502	Perceived social support from family, friends, and significant other	Child PTSD Checklist	62.94 (12–84)	20.17 (0–84) ⁵	Multiple	Correlation overall r = –0.044; family support r = –0.104*; friend support r = 0.019; significant other's support r = –0.032 Correlation r = –0.31**
13 (Cohen et al. 2016) ^a	352	Support from mothers, fathers, siblings, close friends, and peers; emotional support, instrumental support and fun	NSA	NR	NR	Tornado	Correlation r = –0.31**
14 (Danielson et al. 2017)	NR	Support from mothers, fathers, siblings, close friends, and peers; emotional support, instrumental support and fun	NSA	7.09 (1.67–10)	(6.30%) ^d	Child sexual abuse	Correlation r = –0.19**, prediction area under ROC curve 0.70** cohen's d = 0.74

(Continued)

Table 2. (Continued).

Study ID & Reference ^d	Sample size	Type of social support	Measure of PTSD	Level of social support	PTSD score, M (range of possible score) ^e , OR (rate of PTSD diagnosis/%) ^d	Type of traumatic event	Major results ^c
15 (Deane et al., 2018) ^a	254	Perceived family support	TSQ	NR	NR	Community violence	Correlation r = .02
16 (Derivois et al., 2014)	917	Satisfaction of social support	IES-R	Overall 22.43	(45.04%) ^d	natural disaster	Correlation r = 0.153**
17 (Derivois et al., 2014)	540	Social support from home, school, and from religious and other social organizations	PCL-C; IES-R	22.71 (0–36)	16.89 (0–38) ^s	tornado	Correlation r = 0.284**
18 (Donbaek & Elklit 2015)	1988	Support from their parents and/or peers	HTQ	NR	NR	Multiple	Prediction predictor no family support B = 0.14**, predictor no peer support B = 0.01
19 (Du et al. 2018)	4118	Support from family, friends, and significant others	PCL-C	NR	(1.9% & 2.7% in 2 areas) ^d	Tornado	Prediction Generally affected area B = -0.066***, severely affected area B = -0.062***
20 (Ellis et al., 2009)	97	Support from family, a special person, and friends.	ASC-kids	70.8 (12–84)	11.16 (0–57) ^s	Tornado	Correlation r = -0.11
21 (Fang Schiff and Benbenishty 2016)	4733	Support from teachers and other adults at school	IES	NR	NR	Community violence	Correlation r = -0.053**
22 (Gearing et al. 2015)	86	Caregiver support and peer support; perceived availability of functional support	UCLA PTSD-RI for DSM-IV	Caregiver support 0.5 (0–1); Peer relationship 0.67 (0–1)	21 (0–88) ^s (24%) ^d	Natural disaster	Prediction (logistic regression) High caregiver support beta = -1.1, close peer relationship beta = -2.61**
25 (Springer et al. 2007)	106	Family support	CPSS	11.09 (4–16)	38.76 (0–68) ^s	Earthquake	Prediction B = -0.06, beta = -0.07
27 (Hébert et al., 2014)	694	Support from mother, father, siblings, peers, and extra-familial adult	Abbreviated UCLA PTSD-RI	Maternal support 8.76 (0–12); Parental support 6.83 (0–12); Sibling support 1.85 (0–3); Friend support 2.68 (0–3); Other adult support 1.71 (0–3)	NR	Multiple	Prediction Peer support B = -0.33*, maternal support B = -0.12**, paternal support B = -0.02, support from other adult B = 0.01, sibling support B = 0.05
30 (Jia et al. 2015)	631	Emotional support, instrumental support, companionship, intimacy and enhancement of worth	CPSS	49.87 (0–80)	15.84 (0–51) ^s	Earthquake	Correlation r = -0.14**, prediction B = -0.16***
31 (Jieling & Xinchun 2017)	618	Cultural support, instrumental support, companionship, enhancement of worth and intimacy	CPSS	47.18 (0–80)	12.41 (0–51) ^s	Multiple	NR
32 (Jones 2007)	71	Cultural support: formal kinship, informal kinship, and spirituality	A/A CTS	NR	73.41 (41–164) ^s	Multiple	Correlation formal kinship = -0.11, informal kinship = .07; prediction formal kinship support on PTSD beta = -1.61*, Community violence* formal kinship support to predict PTSD beta = 2.45*
33 (Kasler Dahan & Elias 2008)	311	Family support	PTSD-RI	NR	NR	Multiple	Correlation r = 0.098
34 (Kheirallah et al. 2020)	418	Support from family, friends, and significant others	PCL-C	34.8 (12–84)	42	Earthquake	NR
35 (Klasen et al. 2013)	330	Global social support	MINI-KID	2.48 (0–4)	8.89 (0–15) ^s (0.9%) ^d	Home fire	Prediction beta = 0.02

(Continued)

Table 2. (Continued).

Study ID & Reference ^d	Sample size	Type of social support	Measure of PTSD	Level of social support	PTSD score, M (range of possible score) ^e OR (rate of PTSD diagnosis/%) ^d	Type of traumatic event	Major results ^c
36 (Klingman 2001)	604	Global social support	PTSD-Related Symptoms	NR	(6.30%) ^d	Sexual abuse	<i>Prediction Support on somatic symptom</i> beta = 0.14*** <i>crisis</i> beta = 0.12** <i>autonomic</i> beta = 0.13** <i>vulnerability</i> beta = 0.11** <i>Prediction</i> beta = -0.26**
38 (La Greca et al. 2013)	116	Support from parents, friends, teachers, and classmates	Revised PTSD-RI	3.33 (1-4)	23.88	Cyclical political instability and violence	
43 (Lau et al. 2010)	3324	Global social support	CRIES	NR	(22.30%) ^d	Sexual abuse	NR
44 (Leshem Haj-Yahia & Guterman 2016)	1930	Family support; teacher support	UCLA PTSD-RI Adolescent Version	Family support 10.65 (0-15); Teacher support 3.23 (0-7)	33.02 (0-88) ^s	Multiple	<i>Prediction family support</i> B = -1.249** beta = -0.271** <i>teacher support</i> B = -0.403** beta = -0.055**
45 (Ma et al. 2011)	3208	Objective support; subjective support and support use; social support from parents, teachers, relatives and friends	CRIES; K-SADS-PL	NR	NR	Youth who fled to Norway without a caregiver	<i>Correlation social support on CRIES scores</i> r = -0.29***, <i>odds ratio of PTSD diagnosis by interview</i> OR = 0.89***
47 (McCarthy & Thompson 2010)	350	Perceived support from parents, siblings, friends, and members of a faith group	TSSC	NR	NR	Earthquake	<i>Correlation Parent support</i> r = -0.159**; <i>Sibling support</i> r = -0.116; <i>support from street friends</i> r = .013, <i>faith group support</i> r = -0.014, <i>service professionals</i> r = .096; <i>Prediction parent support</i> B = -0.21, beta = -0.09*; <i>Sibling support</i> B = 0.05 beta = -0.07
50 (Moore & Varela 2010)	156	Perceived support from parents, teachers, classmates, and close friends	PTSD-RI	Parents 3.47(1-4); Teachers 3.24(1-4); Classmates 2.87(1-4); Close friends 3.27(1-4)	29.06 (0-80) ^s	Earthquake	<i>Correlation parent</i> r = -.10, <i>teacher</i> r = -.19, <i>friend support</i> r = -.10, <i>classmate support</i> r = -0.22**; <i>prediction parent</i> beta = -.10, <i>teacher</i> beta = -.13, <i>friend support</i> beta = .09, <i>classmate support</i> beta = -0.27* B = 1.80; <i>peer support</i> B = -3.57**, <i>teacher support</i> B = 1.80
51 (Morley & Kohrt 2013)	142	Support from family, friends, teachers, political organizations, neighbours, or NGOs	CPSS-1	NR	NR	Violence	<i>Correlation</i> r = -0.224**; <i>Prediction</i> B = -.05
52 (Muller et al., 2000)	65	Current received social support	CCDS	NR	47.09 (0-112) ^s (26.2%) ^d	War	
53 (Munzer Ganser & Goldbeck 2017)	200	Social support from family, friends, and significant others	UCLA PTSD-RI	69.61(12-84)	26.12 (0-88) ^s	War	<i>Correlation</i> r = -0.17**, <i>dad</i> r = -.08, <i>sibling</i> r = 0.18* <i>friend</i> r = 0.14* <i>teacher</i> r = 0.00; <i>prediction</i> mother B = -.07, <i>father</i> B = -.08, <i>friend</i> B = -.05, <i>teacher</i> B = .04, <i>sibling</i> B = 0.18**, <i>Moderation(support</i> X <i>violence)</i> mother B = -0.11* <i>father</i> B = -0.13* <i>sibling</i> B = .04, <i>friend</i> B = .07, <i>teacher</i> B = .04
54 (Ozer & Weinstein 2004)	349	Perceived emotional support from mother, father, sibling, friend, and teachers	TSSC	NR	0.67 (0-3) ^s	War	<i>Prediction</i> incidence rate ratio = 1.02**
55 (Papadatou et al. 2012)	1468	Perceived support from parents, siblings, teachers, close friends, peers/classmates, and church in the last 6 months	CRIES-13	10.77 (0-18)	15.55 (0-65) ^s	War	

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Table 2. (Continued).

Study ID & Reference ^d	Sample size	Type of social support	Measure of PTSD	Level of social support	PTSD score, M (range of possible score) ^e OR (rate of PTSD diagnosis/%) ^d	Type of traumatic event	Major results ^c
56 (Paul et al. 2015)	2000	(a) emotional social support (b) instrumental social support and (c) recreational social support from mothers, fathers, siblings, close friends, and peers	NSA	NR	2.47	War	Correlation $r = -0.3^{**}$; <i>prediction</i> $B = -0.55^{**}$; <i>beta</i> $= -0.27$; <i>moderation (trauma exposure X support)</i> $B = -0.03^{*}$; <i>beta</i> $= 0.01$
57 (Paxton et al. 2004)	77	Support from family, peers, and other adults	Checklist of Post-Traumatic Stress Symptoms	47.05 (0–90)	58.12 (28–112) [§]	Hurricane	Correlation $r = 0.24$; <i>prediction</i> $B = 0.11$; <i>beta</i> $= 0.18$; <i>moderation (social support X violence exposure)</i> $B < 0.005$, <i>beta</i> $= 0.06$
58 (Pina et al., 2008)	46	Familial support, extrafamilial support and professional support	Child PTSD checklist	NR	19.78 (0–84) [§]	Hurricane	Correlation <i>familial</i> -0.41^{*} ; <i>extrafamilial</i> $r = -0.09$, <i>professional</i> $r = 0.14$; <i>Prediction familial support</i> <i>beta</i> $= -0.16$, <i>extrafamilial support</i> <i>beta</i> $= -0.98^{**}$, <i>professional</i> <i>beta</i> $= 1.63^{**}$
59 (Pinto et al. 2017)	183	Satisfaction and activities of social support	CPSS-V	41.66 (0–60)	20.45 (0–51) [§]	Hurricane	Correlation $r = -0.37^{***}$; <i>prediction</i> $B = -0.88$, <i>beta</i> $= -0.4^{***}$
60 (Ponnamperuma & Nicolson 2016)	755	Family members, friends, and a significant other	PTSD-RI	48.3 (12–84)	15.9 (0–88) [§]	Hurricane	Correlation $r = -0.23$; <i>prediction</i> $B = -0.01$, <i>beta</i> $= -0.05$
61 (Ponnamperuma & Nicolson 2018) ^a	753	Perceived support from family members, friends, and a significant other	PTSD-RI	40.69 (8–56)	17.13 (0–80) [§]	Hurricane	Correlation $r = -0.22$; <i>prediction</i> <i>beta</i> $= -0.09^{*}$; <i>moderation (social support X trauma)</i> $B = 0.01$, <i>beta</i> $= 0.03$
62 (Qin et al. 2016) ^a	1573	Objective support, perceived support, and utilization of support	PTSD-SS	NR	NR	Earthquake	Correlation $r = -0.13^{*}$
63 (Reyes 2008)	61	Perceived parent support	TSCC	Sexually abused sample 3.15 (1–4)	11.53 (0–162) [§]	Community Violence	NR
64 (Rojas et al. 2017)	7875	Emotional support, tangible support, affectionate support, and social interaction	WHO-CIDI	PTSD group mother support 1.84(1–4); father support 2.34(1–4); family support 2.58(1–4); friend support 1.97(1–4)	(3.40%) ^d	Earthquake	PTSD & No PTSD group different levels of Social support from Mother, father, family and friend *** , Cohen's $d = 0.32$
66 (Rubens et al. 2013)	905	Support from friends	DISC-IV	NR	(1.10%) ^d	Flood	<i>Prediction friend support</i> <i>beta</i> $= -0.016$ <i>Moderation (Hurricane exposure*friend support)</i> <i>beta</i> $= -0.002$
67 (Saeed Hassan & Husain 2011)	193	Received support after the disaster from mother, father, siblings, friends, neighbours, and other inhabitants	PCL-S	NR	(72.50%) ^d	History of physical, sexual, or emotional abuse	NR
69 (Schiff Pat-Horenczyk & Peled 2010)	570	Perceived support from family, friends, and significant others	UCLA PTSD RI-Adolescent Version	5.53 (1–7)	(Low exposure group 4.6%) ^d	Multiple	<i>Prediction</i> $B = -1.15$; <i>beta</i> $= -0.17^{***}$; <i>interaction exposure</i> * <i>support</i> $B = .15$; <i>beta</i> $= .04$
70 (Scrimin Moscardino & Natour 2014)	167	Perceived support from family, friends, and significant others	UCLA PTSD RI for DSM-IV	3.0 (0–4)	18.67 (0–81) [§]	Exposure to violence	Correlation $r = -0.07$; <i>prediction</i> $B = -2.15^{*}$
73 (Sleijpen et al. 2016)	111	perceived social support from family, friends, and significant others	CRIES-13	NR	NR	Hurricane	Correlation $r = -0.03$

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Table 2. (Continued).

Study ID & Reference ^d	Sample size	Type of social support	Measure of PTSD	Level of social support	PTSD score, M (range of possible score) ⁵ OR (rate of PTSD diagnosis/%) ^d	Type of traumatic event	Major results ^c
74 (Suomalainen et al. 2011)	757	Perceived social support from family and friend	IES	NR	NR	Multiple	
75 (Thabet et al. 2009)	412	Parent support	SCID	46.9 (0–100)	(30.80%) ^d	Exposure to Violence	<i>Correlation parenting support & PTSD</i> $r = -0.34^{***}$; <i>prediction parenting support on PTSD</i> $\beta = -0.33^{***}$
76 (Tian et al. 2014)	4604	Support from family members, friends, and others received crisis support	PCL-C; SCID	NR	28.11 (17–85) ⁵ (5.7%) ^d	Maltreatment	<i>odds ratio</i> 0.977 ^{***}
77 (Tiereus et al. 2012)	3007	Emotive support, instrumental support, companion, affirmative evaluation, and intimacy	CRIES-13; TSCC	<i>crisis support</i> 29.91 (7–49); <i>current support</i> 29.41 (7–49)	TSCC 5.59 (0–30) ⁵ CRIES 11.7 (0–65) ⁵	Community Violence	<i>crisis support</i> $r = 0.11^{**}$; <i>current support</i> $r = -0.1^{**}$
79 (Wang Wu & Tian 2018)	706	Emotive support, instrumental support, companionship, intimacy, and enhancement of worth	PCL-5	NR	13.87 (0–60) ⁵	Wildfire Disaster	<i>Correlation</i> $r = -0.02$; <i>prediction</i> NS
81 (Yuan et al. 2018)	247	Emotional support, instrumental support, companionship, intimacy, and enhancement of worth	CPSS	NR	NR	Tornado	<i>Correlation</i> $r = 0.09$; <i>prediction</i> $\beta = -0.169^*$; $B = -0.026^*$
82 (Zerach & Elklit 2020)	390	Crisis support: perceived social support after trauma	HTQ Part IV	<i>crisis support</i> 33.16 (7–49); <i>current support</i> 33.61 (7–49)	51.62 (30–120) ⁵	Community Violence	<i>Correlation past support</i> $r = -0.15^*$; <i>current support</i> $r = -0.14^*$; <i>mediation effect between trauma exposure and PTSD</i> NS
83 (Zhang et al. 2011)	1976	Material and psychological support	PCL-C-Chinese Version	NR	33.64 (17–85) ⁵	Hurricane	<i>psychological consultation</i> $\beta = 0.049^*$; <i>material support</i> $\beta = -0.053^*$
84 (Zhen et al. 2016)	951	Emotive support, instrumental support, companionship, affirmative evaluation, and intimacy	PCL-5	47.88 (0–80)	17.3 (0–60) ⁵	Multiple	<i>Correlation</i> $r = 0.1^{**}$; <i>prediction</i> $\beta = 0.04$
85 (Zhou Wu & Zhen 2017)	315	Emotive support, instrumental support, companion, affirmative evaluation, and intimacy	CPSS	2.4 (0–4)	0.76 (0–3) ⁵	Tsunami	<i>Correlation</i> $r = -0.01$
86 (Zhou Wu & Zhen 2018)	397	Emotional support, instrumental support, companionship, affirmative evaluation, and intimacy	PCL-5	49.38 (0–80)	14.96 (0–60) ⁵	Tsunami	<i>Correlation</i> $r = -0.1$; $p = .07$; <i>prediction</i> $\beta = 0.01$; <i>mediation</i> SS-SE-PTSD $\beta = -0.08^*$
87 (Khurshid Irshad & Gul 2020)	561	Perceived social support from family, friends, or significant others	The Children's Revised Impact of Event Scale-13	NR	NR	Flood	<i>Prediction Overall support</i> $B = .11^{**}$; <i>family support</i> $B = -.003$; <i>peer support</i> $B = -.14^{**}$; <i>other support</i> $B = .08$
88 (Lee et al. 2004)	261	Information, emotional, and material support from parents, peers, and teachers	PTSD Reaction Index	NR	NR	Typhoon	<i>Correlation</i> $r = .18^{**}$; <i>Prediction</i> $B = .13^*$
89 (Wang et al., 2020)	597	Emotional support, instrumental support, companionship, affirmative evaluation, and intimacy	PTSD Checklist for the DSM-5	46.23 (0–80)	Intrusion: 2.53; Avoidance: 0.79; Negative alterations in cognition and mood 4.26; Alterations in arousal and reactivity 4.82	Earthquake	<i>Correlation</i> Intrusion: .04; Avoidance: .01; Negative alterations in cognition and mood $-.08$; Alterations in arousal and reactivity .03; <i>Prediction</i> Intrusion: $\beta = -.07$; Avoidance: $\beta = -.06$; Negative alterations in cognition and mood $\beta = .03$; Alterations in arousal and reactivity $\beta = -.06$
90 (Weiler & Taussig 2019)	156	Support from peers, caregivers, and mentors	Trauma Symptom Checklist for Children	Intervention Group: Baseline = .13; Control: Baseline = .12	Intervention Group: Baseline = 47.84; Control: Baseline = 47.50	maltreatment	Alterations in arousal and reactivity $\beta = -.06$

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Table 2. (Continued).

Study ID & Reference ^d	Sample size	Type of social support	Measure of PTSD	Level of social support	PTSD score, M (range of possible score) ^e OR (rate of PTSD diagnosis/%) ^d (1.65%) ^d	Type of traumatic event	Major results ^c
91 (Zhai et al. 2015)	5765	Family support	Chinese version of the Essen Trauma Inventory for Kids and Juveniles (ETI-KJ) (Tagay et al., 2007)	NR		Multiple	<i>Correlation</i> $r = -.256^{**}$; <i>Prediction</i> $t = -4.169^{***}$

A/A CTS = Angie/Andy Cartoon Trauma Scales; ASC-Kids = Acute Stress Checklist for Children; CAPS-C = Clinician-Administered PTSD Scale for Children and Adolescents; CASSS = Child and Adolescent Social Support Scale; CBCL = The Child Behaviour Checklist – PTSD subscale; CCDS = Checklist of Children’s Distress Symptoms: Self Report Version; CPSS = Child PTSD Symptom Scale; CPTS-RI = Child Post-Traumatic Stress Reaction Index; CRIES = Children’s Revised Impact of Event Scale; DICA-R = Diagnostic Interview for Children and Adolescents-Revised; DISC = Diagnostic Interview Schedule for Children; HTQ = Harvard Trauma Questionnaire; IES-R = Impact of Event Scale-Revised; K-SADS-PL = Affective Disorders and Schizophrenia for School-Age Children; MINI-KID = Mini International Neuropsychiatric Interview – adolescent version; NSA = PTSD module from the National Survey of Adolescents; PCL-5 = PTSD Checklist for DSM-5; PCL-C = PTSD Checklist-Civilian Version; PCL-S = PTSD Checklist Specific; PTSD-RI = Posttraumatic Stress Reaction Index for Children; PTSD-SS = PTSD Self-Rating Scale; RPI = Reintegration Process Instrument; SCID = Structured Clinical Interview for DSM-IV Disorders; TSQ = Trauma Symptom Questionnaire; TSCC = The Trauma Symptom Checklist for Children; UCLA PTSD-RI = University of California at Los Angeles PTSD Reaction Index; WHO-CIDI = World Health Organization Composite International Diagnostic Interview;

^aStudies 11 13 15 61 62 are cross-sectional for the variables of interest (SS & PTSD).
^bM: support from multiple sources; F: support from Family (i.e. parents, kinship, and siblings); PE: support from peers (i.e. friends, other children/adolescents, and classmates); PR: support from professionals (i.e. service professionals, teachers); O: support from others; NR: Not Reported.

^cMajor results include effect sizes from correlational analysis, moderation/mediation analysis, and regression analysis that examine the association between SS and PTSD symptom score; * indicates $p < .05$. ** indicates $p < .01$.
^dSee Additional File 3 (online supplementary data) for reference list.

^eThe asterisk represents the significance of the outcome; * represents $p < 0.05$; ** represents $p < 0.01$; *** represents $p < 0.001$; **** represents $p < 0.00001$; if the study report the effect was significant but no p value, * was used to identify this significant effect.

Table 3. Summary of longitudinal studies.

Study ID & Reference ^c	Sample size	Measure of PTSD	Type of social support	Time of measuring SS	Level of PTSD	Time of measuring PTSD	Level of SS	Traumatic events	Major results
5. Bal et al. (2005)	100	TSCC	Received social support after a traumatic experience	T1, T2 (6 months after T1)	NR	T1, T2	T1 34.83 (7–49); T2 35.05 (7–49)	Sexual abuse	Correlation $r = -0.35^*$; prediction beta = -0.31^{**} ; beta = -0.26^*
7. Banks & Weems (2014)-Study 2	192	Modified PTSD-RI	Family support and peer support	T1 (24 months after Hurricane)	T1 24.15 (0–80) [§] ; T2 23.09 (0–80) [§]	T1; T2 = approximately 30 months after Katrina	Peer support 2.97 (0–4); Family support 3.32 (0–4)	Hurricane	Correlation peer support & PTSD(T1) $r = -0.35^{**}$; family support & PTSD(T1) $r = .03$; peer support & PTSD(T2) $r = -0.31^{**}$; family support & PTSD(T2) $r = .01$; prediction peer social support on PTSD(T2) beta = -0.12 , family support on PTSD (T2) beta = -0.02
23 (Geng et al. 2018)	1573	PTSD-SS	Objective support, subjective support, and utilization of social support	T1 (6 months after earthquake); T2 (18 months after earthquake)	T1 38.9 (24–120) [§] ; T2 34.4 (24–120) [§]	T1; T2	NR	Earthquake	NR
24 (Greenberg & Keane 2001)	56	PTSD-RI	Family support	NR	NR	5 months and 9 months after fire	NR	Home fire	Prediction family support beta = -0.32^*
26 (Hall et al. 2014)	176	CPSS	Material, emotional, Guidance, and play support	T1 (baseline); T2 (6 weeks follow up); T3 (4 months follow up)	T1 16.30 (0–51) [§] ; T2 13.82 (0–51) [§] ; T3 10.67 (0–51) [§]	T1; T2; T3	T1 12.63 (0–20); T2 13.83 (0–20); T3 13.64 (0–20)	Cyclical political instability and violence	NR
28 (Hitchcock et al. 2015)	97	CAPS; CPSS	Parental perceptions of social support; children's perception of support from family, a special person and friends	T1 (1 month after trauma); T2 (6 month after trauma)	Child Posttraumatic Stress 11.16 (0–51) [§] ; CAPS follow-up 13.22	CAPS at T2, CPSS at T1	NR	Multiple	NR
29 (Jensen et al. 2019)	118	CPSS	Functional social support	T1 (6 months after arrival); T2 (2 years after arrival); T3 (5 years after arrival)	NR	T3	T3 28.58 (7–35)	Unaccompanied minor refugees in Norway	Prediction coefficient = -0.25
37 (Kuterovac-Jagodic 2003)	252	QPTSR-C	Instrumental support, emotional support, support for self-esteem	T1	T1 36.12 (20–60) [§] ; T2 32.10 (20–60) [§]	T1; T2(30 months after T1)	57.04 (20–80)	War	Prediction beta = -0.21^*

(Continued)

Table 3. (Continued).

Study ID & Reference ^c	Sample size	Measure of PTSD	Type of social support	Time of measuring SS	Level of PTSD	Time of measuring PTSD	Level of SS	Traumatic events	Major results
39 (La Greca Lai Libbre et al. 2013)	568	PTSD-RI	Social support from parents, classmates, teachers, and close friends	T1 (3 months after disaster); T2 (7 months after disaster); T3 (10 months after disaster)	NR	T1; T2; T3	NR	Hurricane	NR
40 (La Greca Silverman et al. 2010)	384	PTSD-RI	Family and peer/friend support	T1 (9 months after hurricane) and T2 (21 months post hurricane)	T1 19.81; T2 17.71	T1; T2	T1 3.2 (1-4); T2 3.24 (1-4)	Hurricane	Prediction SS(T2) on PTSD (T2) coefficient = -0.22
41 (Lai et al. 2015)	353	The UCLA PTSD RI-Revision 1	Support from parents, teachers, and peers(close friends and classmates)	T1 (3-7 months after hurricane); T2 (13-17 months after hurricane); T3 (19-22 months); T4 (25-27 months)	17.62(0-72) ^S	T1; T2 (14-17 months post disaster)	NR	Hurricane	NR
42 (Lai et al. 2018)	426	UCLA-PTSD RI-Revision 1	Support from parents, teachers, friends, and classmates	T1 (3-7 months after hurricane); T2 (13-17 months after hurricane); T3 (19-22 months); T4 (25-27 months)	T1 1.08 (0-4) ^S ; T2 0.86(0-4) ^S ; T3 0.75(0-4) ^S ; T4 0.63(0-4) ^S	T1; T2; T3; T4	Parent support 3.34-3.52 (1-4); teacher support 3.18-3.3 (1-4); peer support 3.12-3.38 (1-4)	Hurricane	Correlation teacher support r = -0.08- -0.23; peer support r = -0.14- -0.39
46 (Martin et al., 2016)	239	CPSS	Friendship social support (positive and negative aspects of close relationships)	preflood	5.55	10 days after flood	NR	Flood	Correlation friend support 0.11; prediction friend support B = 0.02, beta = 0.03
48 (Meiser-Stredman et al. 2014)	90	ADIS; CRIES	Global social support	T1 (2-4 weeks post trauma)	(T1 19.8% ASD) ^D ; (T2 12.3%) ^D	T1; T2 (6 months after trauma)	NR	Multiple	Correlation r = 0.30**
49 (Milan et al. 2013)	1242	DISC-IV	Perceived family support and peer support	T1	0.019	T1; T2 (2 years after T1)	NR	Exposure to violence	NR

(Continued)

Table 3. (Continued).

Study ID & Reference ^c	Sample size	Measure of PTSD	Type of social support	Time of measuring SS	Level of PTSD	Time of measuring PTSD	Level of SS	Traumatic events	Major results
65 (Rosario Salzinger, Feldman & NG-Mak 2008)	667	DICA-R	Social support from guardians and peers	3 annually time-T1; T2; T3	T2 13.88 (0-72) ⁵ ; T3 11.28 (0-72) ⁵	T2; T3	Guardian support 4.11-4.34(1-5); peer support 3.98-4.08 (1-5)	Community Violence	Correlation Support(T1) & PTSD(T2) guardian support r = -0.11*, peer support r = -0.04; support (T2) & PTSD (T2) guardian support r = -0.24**, peer support r = -0.16**, SS(T1) & PTSD (T3) guardian support r = -0.08 peer support r = -0.01; support (T2) & PTSD (T3) guardian support r = -0.12* peer support r = -0.04; support (T3) & PTSD (T3) guardian support r = -0.15** peer support r = -0.10*; Prediction PTSD(T2) & Social support (T1) guardian support for boys beta = -0.04, for girls beta = -0.00, peer support for boys beta = 0.02, girls beta = -0.01; PTSD(T2) & Social support(T2) guardian support for boys beta = -0.12, for girls beta = -0.12, peer support for boys beta = -0.23***, girls beta = -0.13; PTSD(T3) & support(T1) guardian support boys beta = .07, girls beta = -0.09, peer support boys beta = -0.03, girls beta = .04
68 (Salloum & Oveistre 2012) ^a	72	UCLA-PTSD RI	Perceived social support from family, friends and significant others	T1 (3 years post hurricane, pre-treatment); T2 (post-treatment); T3 (3 months f/u) T4 (12 months f/u)	Experiment Group T1 46.82 (0-88) ⁵ , T2 31.18(0-88) ⁵ ; T3 29.88(0-88) ⁵ T4 24.74(0-88) ⁵ ; Control Group T1 42.80(0-88) ⁵ , T2 27.57(0-88) ⁵ , T3 26.30(0-88) ⁵ , T4 25.53(0-88) ⁵	T1; T2; T3; T4	Experiment Group T1 48.03(12-60), T2 47.68(12-60), T3 50.76(12-60), T4 49.41(12-60); Control Group T1 45.53 (12-60), T2 48.23(12-60), T3 48.40 (12-60), T4 49.57(12-60)	Multiple	NR
71 (Shechtman & Mor 2010) ^a	164	CPTS-RI	Perceived support from family, friends, and significant others	T1 (pre-treatment); T2 (post-treatment)	Experimental group T1 1.86 (0-4) ⁵ ; T2 1.40(0-4) ⁵ ; Control group T1 2.03(0-4) ⁵ , T2 1.81(0-4) ⁵	T1; T2	Experimental group T1 5.27(1-7) T2 5.63 (1-7); Control group T1 5.37(1-7), T2 5.65(1-7)	War	NR
72 (Sheerin et al. 2019)	707	NSA	Received emotional support and recreational support from mother, father, siblings, friends, and other peers	T1 (baseline)	Baseline 3.69; (16.6%) ^D	T1; T2 (4 months f/u); T3 (12 months f/u)	Emotional support 6.9 (0-10); Recreational support 8.1 (2-10)	Tornado	Correlation recreational support r = -0.29**, emotional support r = -0.16**, prediction recreational support B = -0.50***, emotional support B = -0.12

(Continued)

Table 3. (Continued).

Study ID & Reference ^c	Sample size	Measure of PTSD	Type of social support	Time of measuring SS	Level of PTSD	Time of measuring PTSD	Level of SS	Traumatic events	Major results
78 (Tol et al. 2010) ^a	403	CPSS	Material, emotional, guidance, and play social support	T1 (pre-treatment), T2 (1 week post-treatment); T3 (6 months post-treatment)	21.7 (0–51) [§]	T1; T2; T3	T1 Peer social support 0.57 (0–5); Emotional social support 3.96 (0–5); Play social support 3.78 (0–5) Mean change in peer social support 0.06; emotional social support –0.11; play social support 0.17 (significant change ^{***})	Political violence	<i>Meditation peer support on treatment</i> coefficient = .016 ^{**} ; <i>play support on treatment</i> coefficient = .022 ^{**}
80 (Wu et al. 2009)	705	UCLA PTSD-RI for DSM-IV	Supportive relationship and detrimental relationships from teachers, family and peers	NR	NR	NR	47.59 (18–72)	Earthquake	NR

ADIS = PTSD Schedule of the Anxiety Disorders Interview Schedule; CAPS-C = Clinician-Administered PTSD Scale for Children and Adolescents; CPSS = Child PTSD Symptom Scale; CPTS-RI = Child Post-Traumatic Stress Reaction Index; CRIES = Children's Revised Impact of Event Scale; DICA-R = Diagnostic Interview for Children and Adolescents-Revised; NR = Not reported; NSA = PTSD module from the National Survey of Adolescents; PTSD-RI = Posttraumatic Stress Reaction Index for Children; PTSD-SS = PTSD Self-Rating Scale; QPTSR-C = Questionnaire for Examination of Posttraumatic Stress Reactions in Children;

TSSC = The Trauma Symptom Checklist for Children; TSQ = Trauma Symptom Questionnaire; UCLA PTSD-RI = University of California at Los Angeles PTSD Reaction Index.

(a) Study ID 68, 71, and 78 originally used interventional design (i.e. quasi-experiment design or RCT); these studies are categorized in cohort group, as SS was not within major purpose of the intervention.
 (b) M: support from multiple sources; F: support from Family (i.e. parents, kinship, and siblings); PE: support from peers (i.e. friends, other children/adolescents, and classmates); PR: support from professionals (i.e. service professionals, teachers); O: support from others; NR: Not Reported.

(c) See Additional File 3 (online supplementary data) for reference list.

[§]The asterisk represents the significance of the outcome: * represents $p < 0.05$; ** represents $p < 0.01$; *** represents $p < 0.001$; **** represents $p < 0.0001$; if the study report the effect was significant but no p value, * was used to identify this significant effect.

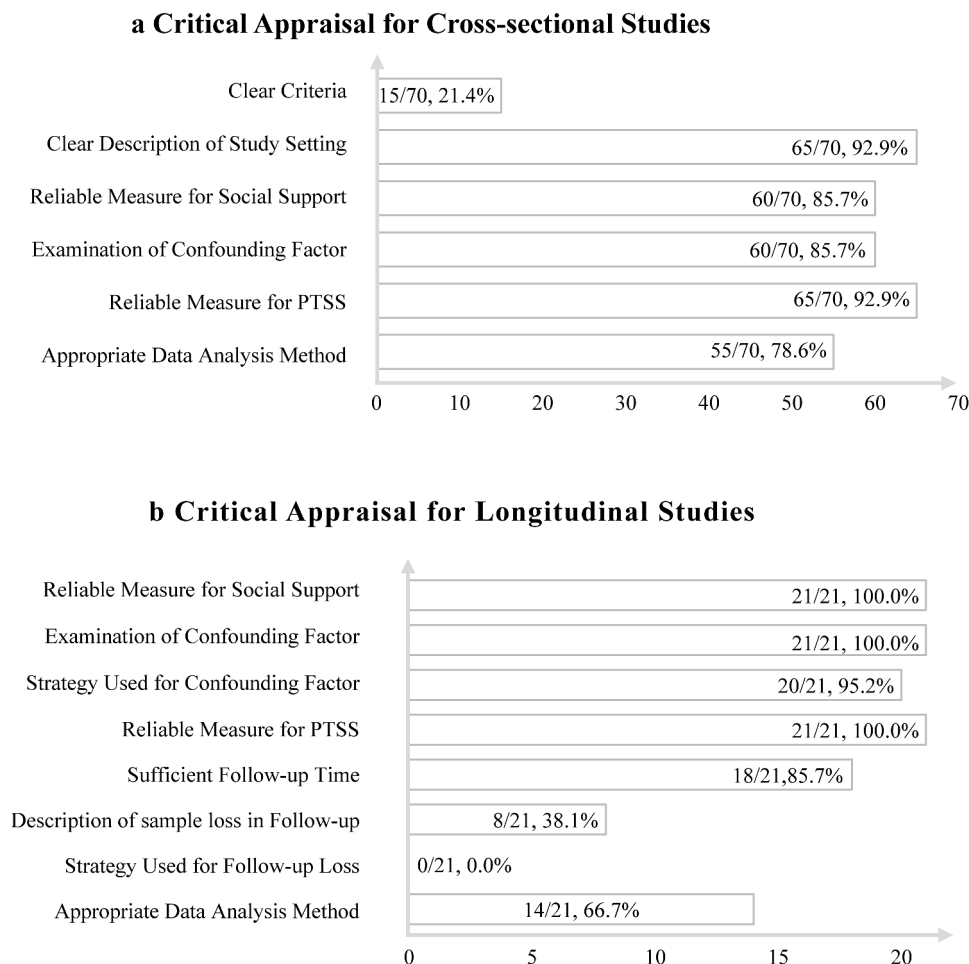


Figure 2. Critical appraisal results for studies. (a) Critical appraisal for cross-sectional studies. (b) Critical appraisal for longitudinal studies. (a) Depicts critical appraisal results for cross-sectional studies; (b) Describes critical appraisal results for longitudinal studies. Numbers and percentages in each bar refer to the number and percentage of studies that met the quality assessment criteria as described in the left vertical axis.

studies (67.03%) having 100 to 1000 respondents ($M = 411$), and 17 studies examining more than 1000 children or adolescents. Over a third of the studies were conducted in North America ($n = 34/90$, 37.78%) and Asia (35/90, 38.89%). Most studies (70/91, 76.92%) were cross-sectional and 21 studies (23.08%) employed longitudinal designs. The majority (66/84, 78.57%) of the studies targeted adolescents (around or over 12 years of age) rather than children. In regards to the specific trauma exposure in the populations, 81.32% (74/91) of the investigations were focused on a single traumatic exposure of the population, comprising natural disasters (40/91, 43.96%), childhood abuse, violence, or maltreatment (19/91, 20.88%); 11/91 (12.09%) examined trauma from war or political conflicts. Seventeen studies (17/91, 18.68%) reported multiple traumatic exposures in their samples. Over half (50/88, 56.82%) studied social support from multiple sources (e.g. peers, family members, professionals, and materials). The second most common source being explored was family support (36/88, 40.91%); peer support was examined in 29.55% (26/88) of the studies. Most studies (87/91, 95.60%) investigated global social support; a few (4/91, 4.40%) studies assessed

social support in response to the children and /or adolescents' traumatic exposure.

3.2. Overview of the cross-sectional studies

3.2.1. Critical appraisal of the cross-sectional studies

Good overall quality was observed in studies using a cross-sectional design, $M = 4.57$ ($SD = 0.92$, range = 2–6), as assessed by 6 items in the JBI cross-sectional appraisal checklist (i.e. Q1, Q2, Q3, Q5, Q7, and Q8; scale range = 0–6) (Takkouche et al., 1999). As presented in Figure 2(a), there was an overall detailed description of study settings (67/72, 93.06%), reliable measurement (62/72 for condition measure and 67/72 for outcome measure), and appropriate data analysis strategies (57/72, 79.17%) employed. Inclusion and exclusion criteria for the studies were not clarified thoroughly in 54 of the 72 cross-sectional studies.

3.2.2. Characteristics of the cross-sectional studies

Characteristics of all cross-sectional studies are presented in Table 2. Children's *perceived social support* from

multiple sources (i.e. family, peers, professionals, and others) was examined most frequently (51.43%, $n = 36$ of 70); among the 30 studies that examined the specific source of support, family (i.e. parents, kinship, and siblings) support was measured by most studies (37.14%, 26 out of 70). Support from teachers was examined and reported by five studies. The most widely-used instruments, including full scales and subscales to measure levels of social support, were the Multidimensional Scale of Perceived Social Support Scale (MSPSS) (18.57%, 13/70) and The Perceived Social Support Scale (PSSS) (10%, 7/70) (Procidano & Heller, 1983; Zimet, Dahlem, Zimet, & Farley, 1988).

3.2.3. Association between social support and PTSS in cross-sectional studies

Among cross-sectional findings, 42/70 studies reported correlational coefficients between SS and PTSS, without our classification of the type of social support. There were varied outcomes across different types or sources of the social support, which implies that a single summary of the direction and magnitude of this association may be oversimplified. 57.14% (24/42) found significant correlational effects (*effect size range* $r = [-.37, .28]$); the remaining 18/42 (42.86%) did not find significant effects. Fourteen out of twenty-four significant findings (58.33%) reported significantly negative correlation coefficients (i.e. more support was correlated with less symptomatology); the remaining 10 reported significantly positive correlation coefficients.

Thirty-three studies examined the association between overall SS and PTSS, with 18 correlation coefficients being statistically significant (*effect size range* $r = [-.37, .28]$); 14 studies found a significantly negative correlation between the two variables. The pooled coefficient r for correlation between global social support and PTSS in correlational studies was $-.09$, 95% CI $[-.15, -.03]$, $p < .01$, with a statistically significant heterogeneity, $Q(29) = 639.7$, $I^2 = 96.0\%$, $p < .001$.

There were 10 studies on the specific association between family support and PTSD; 7 revealed significant coefficients (*effect size range* $r = [-.41, -.10]$). All of them reported negative correlation coefficients meaning that higher perceived family support was associated with lower PTSD. The pooled correlation coefficient r was $-.12$, 95% CI $[-.20, -.04]$, $p < .005$, with a statistically significant heterogeneity, $Q(13) = 70.11$, $I^2 = 83.1\%$, $p < .0001$.

Seven studies examined the specific association between perceived support from peers and PTSS with three significant correlation coefficients and effect sizes ranging from -0.3 to 0.14 . Two of the significant effect sizes were negative. The pooled correlation coefficient was $-.08$, 95% CI $[-.19, .07]$, $p = .143$, with a statistically significant heterogeneity, $Q(7) = 80.50$, $I^2 = 86.3\%$, $p < .0001$. Five studies examined the association between support from teachers and PTSS. Only 3 of the studies

reported the correlational coefficients, ranging from $.00$ to $-.21$. The pooled correlational coefficients were not calculated due to insufficient evidence.

Three studies (i.e. study ID 3, 77, 82) examined social support directly related to trauma exposure. All three studies used the Crisis Support Scale (CSS; Elklit, Schmidt Pedersen, & Jind, 2001). They all found a weak negative association between crisis support and participants' posttraumatic stress symptoms, with correlations ranging from -0.1 to -0.15 . One study (i.e. study ID 83) reported the effects of specific types of social support on PTSS; it found significantly positive association between psychological consultation support and PTSS ($\beta = 0.049$, $p < .01$) and significantly negative association between material support ($\beta = -0.053$, $p < .01$).

A further inspection of how levels of social support affected the presence or absence of PTSD diagnosis did not yield clear results. This is because: (1) there were only a few studies reporting the information (i.e. study ID 22, 45, 64, and 76), and (2) the reported forms of effect sizes were not consistent. For example, the study ID 45 and 76 recorded PTSD among their defined high social support groups, they found the odds ratios were 0.89 and 0.977, respectively. The Cohen's d (i.e. the difference between social support levels in the PTSD group and no PTSD group) from the study ID 64 was 0.32.

3.3. Overview of longitudinal studies

3.3.1. Critical appraisal of longitudinal studies

As shown in Figure 2(b), a moderate level of quality was found in the longitudinal studies, $M = 5.90$ ($SD = 0.97$, range = 4–7), as assessed by 8 items in the appraisal checklist (i.e. Q3, Q4, Q5, Q7, Q8, Q9, Q10, and Q11; range = 0–8), as shown in Figure 2(b). The 21 studies showed good quality in the measurement of social support (i.e. Q3; 21/21), PTSS (i.e. Q7; 21/21), confounding factors (21/21), and the setting of follow-up time intervals (18/21). Few studies stated follow-up loss (8/21) and strategies to address the loss during the follow-up time (0/21).

3.3.2. Characteristics of longitudinal studies

The characteristics of longitudinal studies are presented in Table 3. After the screening process, 21 longitudinal studies met the inclusion criteria. Of the 19 reported times of measurement for social support, 13 (68.42%) measured more than once, typically with a time interval between six weeks and one year. For the studies measuring a specific source of support, emotional support from family (7/21, 33.33%) was more frequently measured than the other sources of support (i.e. from peers or professionals). Another trend that repeats findings in cross-sectional studies is that of the 13 studies that reported the average and the range of social support levels, 92.31% (12/13) found that the children/adolescents

perceived moderately high levels of support. For the studies showing scores on perceived social support over time (Study ID 5, 26, 40, 42, 65, 68, 71, 78), a relatively stable tendency was found.

Nineteen studies (15/21, 71.43%) measured PTSS more than once, typically with the same time intervals as those for social support. Five out of 21 studies were conducted among hurricane survivors. Participants showed an overall decrease in PTSS over time, as suggested by six observational longitudinal studies (study ID 7, 23, 26, 37, 42, and 65).

In total, three studies delivered a psychological intervention for PTSS (study ID 68, 71, and 78), two of which (study ID 68 and 71) compared perceived support among experimental groups and control groups, with both experiencing increasing support over time. These two studies reported both the pre-treatment and post-treatment outcomes of PTSS and compared the changes among the treatment group and the control group. Both groups showed less severe symptoms after treatment.

3.3.3. Associations between social support and PTSS in longitudinal studies

Inspection of the longitudinal studies indicates that the correlation between overall SS and PTSS was only reported by two studies, both with significant findings (*effect size range* $r = [-.35, .30]$). Five studies used a regression model between overall SS and PTSS; all reported a negative coefficient (i.e. higher SS predicted less severe symptoms). Four out of five studies indicated that SS was a significant negative predictor of PTSS (*effect size range beta* $= [-.32, -.21]$). A notable finding from the interventional studies is that the participants' perceived level of social support showed an increasing trend over time regardless of the treatment condition (experimental group versus control group).

One study (i.e. study ID 5) assessed social support in response to traumatic events using the Crisis Support Scale (CSS; Elklit et al., 2001). It found a significantly moderate negative correlation ($r = -.35, p < .01$) between crisis support and the development of PTSS among the participants. The prediction model revealed that trauma-related support was a negative predictor of PTSS ($\beta = -.31, p < .01$). Moreover, one study (i.e. study ID 72) showed the outcome of the specific type of support and its effect on PTSS. It revealed that both recreational support (i.e. the support that children/adolescents received from others when they wanted to have fun) and emotional support showed a significantly negative association with PTSS, $r = -.29$ and $-.16$, respectively. Concerning presence of PTSD, only one longitudinal study (i.e. study ID 13) noted the effect of levels of social support on dichotomous PTSD outcomes. It revealed that high levels of social support significantly increased the likelihood of developing PTSD, *odds ratio* = 1.3.

3.3.4. Association between social support and PTSS by study characteristics

The association between social support and PTSS was further examined with participant age group and type of trauma exposure in mind. This was conducted to examine the effect of development timing and trauma on the relationship between PTSS and social support. For the age group 6 to 12 years, the association between social support and PTSS was not consistent, and the evidence was not sufficient to conclude. Two articles investigating the association between global support and PTSS were available ($r = .098$ and $.18$, respectively). For peer support, the correlation to PTSS was between $-.35$ and $.11$ (3 negative and 1 positive coefficients). Family support included 3 positive and 3 negative coefficients, *effect size range* $r = [-.41, .07]$.

For the adolescent group more studies were available ($n = 66$). The range of the correlation effect sizes between PTSS and global social support were $r = [-.35, .28]$; the pooled correlation effect size r was $-.10$, 95% CI $= [-.16, -.03]$, $p < .01$, with a statistically significant heterogeneity, $Q(28) = 555.61, I^2 = 95.5\%, p < .0001$. Six articles on peer support illustrated 3 positive and 3 negative coefficients with PTSS (*range of the effect size* $r = [-.30, .14]$). For family support, the negative correlation with PTSS was more evident, as indicated by 7 articles with 6 negative correlation coefficients and 1 positive coefficient, *range of the effect size* $r = [-.34, .04]$.

Classified by participants' type of trauma exposure, 5 subgroups were formed: (1) natural disaster, (2) violence, abuse, and/or maltreatment, (3) multiple traumas, (4) war and political conflicts, and (5) other trauma. The association between global social support and PTSS in the natural disaster group had 13 negative and 5 positive coefficients, *range of the effect size* $r = [-.31, .28]$; the pooled correlation effect size r was $-.08$, 95% CI $= [-.17, .01]$, $p = .07$, with a statistically significant heterogeneity, $Q(16) = 462.32, I^2 = 96.6\%, p < .0001$. The correlation of PTSS with family support and peer support illustrated a similarly negative direction (family support *effect size range* $r = [-.41, .01]$, 3 negative and 1 positive coefficients; peer support, *effect size range* $r = [-.39, .11]$, 3 negative and 1 positive coefficients).

For participants who were exposed to violence, abuse, and/or maltreatment, the direction of the correlation between global support and PTSS was less consistent (*range of the effect size* $r = [-.35, .24]$, 4 negative and 2 positive effect sizes); the pooled correlation effect size r was $-.12$, 95% CI $= [-.28, -.05]$, $p = .15$, with a statistically significant heterogeneity, $Q(5) = 27.25, I^2 = 84.1\%, p < .0001$. The trend of a negative association with PTSS was found in peer support (*range of the effect size* $r = [-.24, .14]$; 7 negative, 2 positive) and family support (*range of the effect size* $r = [-.27, .18]$, 11 negative 2 positive). For children and adolescents who experienced multiple traumatic events, more negative than positive correlations were found between global social support

and PTSS (negative: $n = 6$; positive: $n = 2$; range of the effect size $r = [-.37, .30]$). The associations between other types of social support and PTSS and the associations assessed in other trauma-exposed groups were not synthesized as no sufficient evidence could be identified.

4. Discussion

4.1. Overview

This review mapped out the evidence of the last two decades on what role social support plays in the development of PTSS among children and adolescents. To our knowledge, this is the first work that systematically reviewed the specific effect of both global and different sources of SS among children and adolescents with PTSS. The previous review from Trickey et al. (2012) focused on all risk factors and only identified 3 studies on social support. We were able to include a large number of studies ($n = 90$) with a large number of research participants ($N = 77, 439$) in this review. The majority of the studies showed an overall good quality, especially in the assessment of SS and PTSS.

4.2. Discussion of findings

The first major finding was that the examination of global/general social support revealed a significantly negative, but weak, association with PTSS. This means that higher levels of global social support were linked to lower levels of posttraumatic stress symptoms. This finding replicated outcomes of previous systematic reviews from other populations (i.e. adults; DiGangi et al., 2013), earthquake survivors (Alipour & Ahmadi, 2020), cancer patients (Shand, Cowlishaw, Brooker, Burney, & Ricciardelli, 2015), and longitudinal studies (Wang, Chung, Wang, Yu, & Kenardy, 2021). Furthermore, this review found that the source of SS can be a determinant of the direction and magnitude of the effect of SS on PTSS. Most studies of familial support showed it has a protective effect, while studies of peer support revealed ambivalent results. This is in line with the previous review on the relationship between SS and general well-being among these age groups (Sen et al., 2010). Sen et al. (2010) found that, in contrast with peer support, familial support manifested a stronger association with well-being. The importance of family support and environment in one's early development has also been suggested by many other studies (Ozer, 2005; Rhee, Belyea, & Brasch, 2010). Research that compared support from family and peers further revealed the unique role of family to provide social resources (Barrera & Li, 1996).

Longitudinal research about the course of PTSS over time shows decreasing symptoms, which might reflect the fact that this review included samples with moderate to high levels of SS and that some studies even revealed a slight increase in the level of SS. A bidirectional

mechanism might explain these changes. We found that in longitudinal studies, higher levels of perceived SS negatively predict PTSS (Andrews, Brewin, & Rose, 2003; Vranceanu, Hobfoll, & Johnson, 2007). This suggests that there was a positive impact of supportive social networks and relationships on the course of PTSS later on. On the other hand, the onset of mental health disorders like PTSS may interfere with one's social life, including disruption of interpersonal relationships (Laffaye, Cavella, Drescher, & Rosen, 2008). Therefore, the amelioration of such symptoms may also manifest in the improvement of their social interaction (Schnurr & Lunney, 2016). The finding of a protective role of SS in the longitudinal studies suggests that SS may need a period of time to exert its impact on the remission of PTSS. A cross-sectional design might mask the protective role of SS as both SS and PTSS were assessed at the same time period (Ellis, Nixon, & Williamson, 2009). Due to the limited amount of longitudinal evidence, more longitudinal observations are required to replicate these findings.

To determine the relationship between social support and PTSS, it is essential to specify the concept of social support. Otherwise, the effect might be shaded; for example, in all cross-sectional studies, 58% of the significant findings indicate negative correlations and the remaining found positive correlations between social support and PTSS. A possible explanation of the existence of the positive correlations might imply an interactive relationship. Children and adolescents might seek more social support when experiencing more severe symptoms. A recent study by Seto, Rodrigues, Ham, Kirsh, and Hilton (2020) also discovered that PTSS can be a positive predictor of seeking social support.

There was obvious heterogeneity of the literature regarding the association between social support and PTSS among participants under 18 years old. Firstly, the broad notion of social support added conceptual heterogeneity (Fiore, Coppel, Becker, & Cox, 1986). Except for the source and type of support discussed in the current review, the umbrella term 'social support' was used to describe factors such as satisfaction of received support (Derivois, Cénat, & Mérisier, 2014), perceived strength of support (Deane et al., 2018), availability of support (Bal et al., 2003), negative social interaction (Martin, Felton, & Cole, 2016), crisis support (Bal, De Bourdeaudhuij, Crombez, & Van Oost, 2005), and tangible support (Muller, Goebel-Fabbri, Diamond, & Dinklage, 2000) as presented in the reviewed papers. The second aspect is the methodological heterogeneity – various associations were reported between social support and PTSS. Except for correlational relationships, most of the reviewed articles also examined the effect of social support as a predictor, a moderator or a mediator for PTSS. The complication of the designs and the confounding factors increased the difficulty of knowledge synthesis, especially for quantitative outcomes.

A third domain of the heterogeneity was presented in the meta-analysis of the effect size outcome. This statistical heterogeneity illustrated that study results varied not only for different forms of social support but also within the same type of support (e.g. family support or peer support) and that due to the heterogeneity, the dataset was not ideal for meta-analysis.

4.3. Implications

The conceptual, methodological, and statistical heterogeneity of the studies has several implications. First, this review highlights the importance of clarifying the type of social support during the conceptualization of a research question in this domain. Second, the classification of study designs, methods, and form of reported coefficients are needed to clarify ambiguity in the field.

A practical implication regarding the protective role of family support is to consider long-term policies that strengthen social resources for parents and enable parents' competence in supporting their offspring. However, current evidence is limited that social support interventions reduce PTSS symptoms following trauma. Longitudinal designs should be implemented when exploring the effects of SS as cross-sectional designs are insufficient to observe causal relationships between SS and PTSS. Experimental studies, e.g. randomized controlled trials, could elucidate strong causal relationships between some forms of social support and PTSS. While encouraging parents to withhold support for their children in the face of trauma would be unethical, interventions to bolster naturally occurring social support are possible.

4.4. Knowledge gaps, limitations, and future directions

This review identified knowledge gaps that future research could illuminate. So far, existing evidence was more focused on emotional support from family and friends, while other types of support (e.g. instrumental and informational support) were rarely discussed. Future studies are warranted to expand the scope of the support, particularly concerning other forms of support. There was a paucity of knowledge on several specific topics, including (1) the influence of social support on the likelihood and development of clinical posttraumatic stress disorder; (2) discrepancy of the effect of trauma-related support (i.e. crisis support) from that of global social support; (3) how other trauma survivors, rather than individuals who experienced natural disasters, violence, abuse, or maltreatment, reacted to different magnitudes of social support (e.g. whether the effect is different from that of natural disaster survivors). This review did not aim to discuss how social support affects individuals' organic diseases and their subsequent PTSS, which is also a valuable question to answer. Currently, most

studies rely only on the self-reported level of SS; future studies could include more objective measures of social support and also ask parents and teachers about the availability of social support networks and resources. The assessment of social support should specify what type of support they exactly shed light on; using social support to describe a specific form (e.g. emotional support) is not recommended according to this scoping review. Finally, due to the limited literature on each type of social support, we also allowed studies that included participants below or above our age range as long as the average age of the participants was met. This could have led to a bias in the data analysis.

Implications from this study should be applied with the consideration of some limitations: more observational than interventional studies were identified in this paper. In the reviewed observational studies, there were more cross-sectional studies ($n = 70$) than longitudinal studies ($n = 21$), which hindered the examination of the causal relationship between social support and PTSS. Current studies sampled substantially more adolescents than children below 12 years old and thus results could not be specified for age groups. Questions like how or whether the age group determines the relationship between SS and PTSS remain unanswered. The primary criterion for the assessment of PTSS (i.e. trauma history as the first criterion for clinical diagnosis and assessment of PTSD) among the samples in the reviewed articles was documented and should also be an inclusion criterion for future systematic reviews in PTSS. Moreover, low to modest severity of PTSS was found in our samples; the associations discussed in this study should also be further investigated in more severely burdened samples (e.g. clinical samples with PTSD). Clinical samples would also help to clarify the effect of SS on the remission of chronic PTSS (Bal et al., 2005). Finally, most of the reviewed studies investigated positive aspects of social support, such as satisfaction of received support, perceived strength of support; negative forms of social support (e.g. social constraints, negative appraisals, negative social interaction) were not discussed due to lacking studies identified in the review. Evidence from adults revealed the effect of negative support on developing PTSS (Belsher, Ruzek, Bongar, & Cordova, 2012; Holeva, TARRIER, & Wells, 2001). Whether this effect holds true among children and adolescents is not yet determined (Muller et al., 2000; Ponnampereuma & Nicolson, 2016). Future studies should expand the current scope of definition for 'social support' and synthesize knowledge on negative support and its effect on post-trauma pathology.

5. Conclusion

The conceptual, methodological, and statistical heterogeneity of the studies was evident. Investigation of social support as an umbrella term might obfuscate true

relationships. The current evidence focused on global support and emotional support from family and peers. Other types of support (e.g. information and resources) and support from other sources (e.g. teachers, professionals) have not been studied widely. The synthesis of the current evidence suggests a weak negative relationship between global SS and PTSS in children and adolescents. Family support played a more stable protective role in the development of one's PTSS than peer support. The long-term effects of SS suggest that future research should focus more on longitudinal, including interventional, designs.

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ORCID

Ting Xiong  <http://orcid.org/0000-0001-5060-0184>
 Athena Milios  <http://orcid.org/0000-0002-0722-124X>
 Patrick J McGrath  <http://orcid.org/0000-0002-9568-2571>
 Elisa Kaltenbach  <http://orcid.org/0000-0002-6724-9973>

Contribution

TX – Conceptualization, data collection, data charting and data synthesis, methodology, writing original draft, project administration.

AM – data collection, data charting and data synthesis, editing and writing review.

PJM – Conceptualization, methodology, editing and writing review, supervision.

EK – Supervision, conceptualization, editing and writing review.

Ethics statement and consent

Not applicable. No review board was involved. There were no participants in the study, therefore no informed consent was obtained.

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