Research article

Associations between adverse childhood experiences and adversities later in life. Survey data from a high-risk Norwegian sample

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ABSTRACT

Background: A history of childhood abuse and neglect (CAN) is associated with exposure to later negative life events. CAN at an early age, multiple cooccurring exposures (cumulative events), and a high severity and frequency of exposure have potential detrimental long-term effects.
Objective: The present study examines the relationship between the severity of CAN and the prevalence of school difficulties and hardship at school, adult adversity and mental health.
  Participants and Settings: Participants were recruited from in- and outpatient mental health or substance abuse treatment facilities, child protective services (CPS), and prisons (N = 809, age range = 13–66, mean age = 27.62, SD = 10.47).
Methods: Exposure to childhood maltreatment was assessed by the Childhood Trauma Questionnaire Short Form (CTQ-SF). After adjusting for gender and age, we conducted a risk ratio regression analysis to investigate associations between severity of child abuse and neglect and hardship at school, adult adversity and adult mental health.
Results: The moderate and severe level groups of CAN had statistically significant higher risk ratios for experiences of school difficulties, hardship at school, adult adversity and mental health problems. A robust dose-response was found between severity levels.
Conclusion: At an individual level the findings highlight the association between exposure to abuse and adult adversity, underscoring the importance of targeting individuals with high risk of exposure to CAN to reduce the negative long-term risk for Polyvictimization.

1. Introduction

Childhood abuse and neglect (CAN; i.e., sexual, physical, and emotional abuse and physical and emotional neglect) can have a devasting impact on children. Research has extensively documented CAN to be among the most important determinants to

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subsequent adverse psychological, somatic and social consequences affecting childhood and adult development throughout the lifespan (Finkelhor, Turner, Shattuck, & Hamby, 2015; Carr, Martins, Stingel, Lemgruber, & Juruena, 2013; Fergusson, Boden, & Horwood, 2008; Kessler et al., 2010).

A history of CAN is also one of the most robust predictors of re-victimization (Relyea & E Ullman, 2016). A graded effect for CAN on health outcomes has also been established and experiencing more than one form of abuse or neglect is associated with increased risk for mental and physical difficulties in adulthood. Individuals exposed to CAN may also remain at increased risk of new adverse events later in life (Dunn, McLaughlin, Slopen, Rosand, & Smoller, 2013). Studies on children exposed to CAN suggest they are at increased risk for substance abuse (Widom, Marmorstein, & White, 2006), criminal behavior (Widom & Maxfield, 2001), suicide attempts (Bridge, Goldstein, & Brent, 2006) and impaired academic performance (Slade & Wissow, 2007) as they transition into adolescence. Experiencing different forms of neglect and abuse in childhood, in what should be safe and trusting relationships disrupt important self-capacities (Álvarez-Lister et al., 2016), for instance, through processes such as self-blame, emotional dysregulation and maladaptive coping strategies (e.g., substance abuse, negative peer relationships). Adult mental health problems associated with CAN include post-traumatic stress disorder, anxiety, depression, substance abuse, psychosis and personality disorders, antisocial behaviors and suicidality (Dunn et al., 2013; Gilbert et al., 2009; Kessler et al., 2010).

Several authors have advocated a broader developmental lifespan approach to CAN using the concepts polyvictimization (PV) (Finkelhor, Ormerod, & Turner, 2009; Hamby et al., 2018) and developmental victimology (DV) (Finkelhor & Tucker, 2015). Poly-victimization refers to the experience of multiple victimizations of different kinds such as exposures to violence, crime and abuse during their lifetime (Turner, Finkelhor, & Ormerod, 2010). The DV-concept is applied within an integrative development framework, where all the different ways children and adolescents can be victimized, as well as an analysis of protective factors that may affect developmentally appropriate interventions, are included (Finkelhor & Tucker, 2015).

A large body of the research on child maltreatment have used surveys to estimate the prevalence and consequences of CAN in the general population. Evidence from general population samples suggest that PV is more related to trauma symptoms than experiencing repeated victimization of a single type and PV explains most of the psychological consequences of individual forms of victimization (Turner, Shattuck, Finkelhor, & Hamby, 2017). However, lots of what we know about CAN and consequences reflect prevalence and consequences in the general population. While this is important, the situation might be different in the clients seen in settings such as mental health agencies, law enforcement agencies, and child protection services. Frontline workers in clinical, social and correctional agencies often meet the same persons as clients and need research-based knowledge to inform their work. It is thus important to establish knowledge on frequencies, severity levels and characteristics of CAN that can inform resource allocation, revision of practices, education and training of personnel (professions in mental health, child protection and correctional services (Jud, Fegert, & Finkelhor, 2016).

In a review of a series of meta-analyses, Stoltenborgh, Bakermans-Kranenburg, Alink, and IJzendoorn (2015)) reported that most population surveys have used retrospective adult reports of CAN through self-administrated questionnaires or telephone interviews, which both could be influenced by memory biases, and provide rates of CAN that only apply to the past decades. There has been growing awareness of the increased risk of interpersonal polyvictimization and the high prevalence of CAN in clinical populations (Álvarez-Lister, Pereda, Guilera, Abad, & Segura, 2016), but there is still a need for a stronger research agenda on CAN both in clinical settings and research in high-risk populations (Jud et al., 2016). The research may provide better descriptions on the multiplicity of ways children and adolescents can be exposed to DV and PV. These considerations highlight the need for further studies that specifically include high-risk populations to increase our knowledge about associations between CAN and exposure to adversity in a lifespan perspective.

The present study is part of a large research program focusing on CAN, adolescent and adult mental health (e.g. Mørkved et al., 2017, 2018; Rasmussen, Arefjord, Winje, & Dovran, 2018). In the present study, we will examine associations between severity levels of CAN, exposures to adversity and adult mental health in a sample of different groups with high-risk of CAN exposure. Our first hypothesis is that there is an association between CAN and adversities and adult mental health. Our second hypothesis is that there will be a higher risk for reported adversities and adult mental health difficulties associated with severity levels of CAN.

2. Methods

2.1. Participants

The sample consists of different groups with assumed high risk of having been exposed to CAN. The sample constituted 834 participants from the following groups: out-of-home placement group (n = 80) with adolescents currently in foster care and young adults who had recently been in foster care; a group of adults in treatment for dual diagnosis (substance abuse disorder and mental health problems) (n = 165); a group of patients from in- or outpatient treatment of mental health problems (n = 480); and a group of male inmates (n = 109) from high- and low-security prisons. The study was approved by the Regional Committee for Medical and Health Research Ethics (REC West) and the Norwegian Social Science Data Services (NSD) (reference number: 2009/1133). The authorities representing Child Protective Services, mental health and drug abuse treatment facilities and prisons have approved the project. The participants were recruited through various approaches.

2.2. Sampling procedures

All respondents received oral and written information with regard to the planned study. Respondents from the various subgroups

were invited to take part in the study, either by their primary contact person in the child protection services, their former foster care support organization or therapist. Data collected from the group of prisoners was approached as participants of a collaborating research project and a prison officer invited the inmates to participate; those who wanted to participate were contacted by a staff member of the research project. The respondents received no compensation for taking part in the study. All participants signed a consent form prior to participation. The exclusion criteria were poor language skills, active substance abuse, or debilitating psychotic symptoms.

2.3. Measurements

The Childhood Trauma Questionnaire Short Form (CTQ-SF)

Childhood trauma (CT) was measured by The Norwegian version of The Childhood Trauma Questionnaire Short Form (CTQ-SF; Dovran et al., 2013). The CTQ-SF (Bernstein & Fink, 1998) is a 28-item, retrospective, self-report questionnaire assessing occurrence and severity of traumatic events related to neglect and abuse. Item response anchors follow a Likert scale (1–5) from *Never true* to *Very often true*. The responses are summed up in five subscales; emotional abuse (e.g., "called names by family," "felt hated by family"), physical abuse (e.g., "hit hard enough to leave bruises," "punished with hard objects"), sexual abuse (e.g., "was touched sexually," "made to do sexual things"), emotional neglect (e.g., "not felt loved," "was not looked out for"), and physical neglect (e.g., "not taken care of," "not enough to eat"). By using the recommended cut-off, the scores can be classified as none, low, moderate or severe (Bernstein & Fink, 1998). The most recent version is the short form (CTQ-SF) contains 28 items, of these, 3 items constitute a minimization/denial subscale (Bernstein & Fink, 1998) which will not be used in the present study. The Norwegian version used showed similar psychometric qualities as the original and demonstrated satisfactory to excellent internal consistency, with the reliability estimates ranging from 0.78 to 0.95 (Dovran et al., 2013). The internal reliability for the CTQ-SF in this sample was: $\alpha = 0.94$.

2.3.1. Stressor Criteria-PTSD (SC-PTSD)

The SC-PTSD is a questionnaire that asks if the person have witnessed other persons having been victims of potentially traumatic events, or if they have been confronted with family's/friends' exposure to potentially traumatic events in a lifetime perspective (life-threatening, integrity-threatening events, sudden/untimely death, and/ or sexual abuse (rape)). The SC-PTSD was developed for clinical screening purposes in the Norwegian population. It was based on the stressor criterion list for PTSD from DSM-IV (APA, 2000), the list of events from The Clinician-Administered PTSD Scale (CAPS; Blake et al., 1995) and the list of events in section 21: Post Traumatic Stress Disorder from Composite International Diagnostic Interview (CIDI; World Health Organization, 1990). The instrument contains 24 items and is scored on a dichotomized scale ("yes"/"no") (Winje, 2015a). The internal reliability for the SC-PTSD in this sample was: $\alpha = 0.85$.

2.3.2. Adverse life events in adolescence (ALEA)

The ALEA is a questionnaire assessing incidence and severity of hardships at school (non-life or integrity threatening) (e.g., difficulties related to learning in school, peer bullying, loneliness, and substance abuse in the family). The ALEA was developed for clinical screening purposes in the Norwegian population. The instrument contains 19 items and is scored on a five-point scale ranging from "not at all" (0) to "very much" (4) Winje, 2015b. The internal reliability for the ALEA in this sample was: $\alpha = 0.88$. For the current study, responses, > 1 on the ALEA questionnaire (0-1= no case; 2-4= case) were used as a cutoff for dichotomizing.

2.3.3. The symptom check list-90-revised (SCL-90-R)

The SCL-90-R questionnaire assesses symptoms of psychological distress during the last seven days (Derogatis, 2010). This self-reported instrument contains 90 items with nine symptom subscales, and items are scored on a five-point scale of distress ranging from 'not at all' (0) to 'extremely' (4). The symptom variables were dichotomized for risk regression analyses. The internal reliability for the SCL-90-R subscales in this sample was: $\alpha = 0.97$. The manual's caseness scores, i.e., symptom scores above the clinical threshold defined as t-value $\geq$ 63, were used as a cutoff for dichotomizing (Derogatis, 2010).

2.4. Statistical analysis

Based on the threshold scores from the CTQ-SF manual, CTQ-SF was employed as independent variable: Level 0 (No CAN) corresponds to no childhood maltreatment, level 1 (Low CAN) corresponds to low levels of 1 to 5 subscales of CT, level 2 (moderate CAN) corresponds to moderate or severe levels of 1 to 3 subscales of CT, and level 3 (severe CAN) corresponds to 4 to 5 CT subscales at moderate to severe levels. Next, variables to reflect adversities were created for school difficulties and hardship at school ("yes" on the SC-PTSD questionnaire), PTE exposure (Scores, > 1 on the ALEA questionnaire), and adult mental health (symptom scores above the clinical threshold defined as t-value $\geq$ 63 were used as a cutoff = 0.75 (male) and 0.94 (female) (Derogatis, 2010). We used a relative risk regression model to compute risk ratios (RRs) for different outcomes and adversities as a function of the CTQ-SF predictor variables. Risk ratio regression as used in the present study is a regression with an outcome variable that is categorical, and predictor variable(s) that are categorical or continuous (Ranganathan, Pramesh, & Aggarwal, 2017). Risk ratios were determined using the no CAN group as a reference for comparisons with the low, moderate and severe level groups. The analysis was adjusted for age and gender. Respondents with > 2 missing item data were not included in the analyses (N = 25; 3.0%). Analyses were done in Stata/SE 15.1 (StataCorp. 2017. Stata Statistical Software: Release 15. College Station, TX: StataCorp LLC).

Table 1

Occurrence of school difficulties and hardship at school and adjusted associations with severity of CAN.

	Risk Ratio (95% CI)[a,b] n = number of exposed (yes/no)			
	Childhood Abuse or Neglect (CAN)			
	none n = 177	low n = 191	moderate n = 283	severe n = 102
Learning Difficulties[c]				
Concentration	ref. 55/122	1.30 (.92-1.84) 81/191	**1.81** (1.32-2.48) 166/117	**2.51** (1.75-3.60) 73/29
Reading	ref. 18/159	1.36 (.75-2.46) 29/161	**2.02** (1.19-3.43) 71/213	**3.17** (1.76-5.71) 34/68
Writing	ref. 7/177	.83 (.29-2.39) 7/183	2.15 (.92-5.02) 29/256	**5.34** (2.23-12.80) 22/80
Math	ref. 44/132	1.11 (.74-1.66) 54/137	**1.83** (1.28-2.60) 129/154	**2.38** (1.58-3.57) 57/45
School hardship[c]				
Bullied at prim. school	ref. 26/150	1.1 (.65-1.9) 31/159	**1.99** (1.2-3.1) 81/202	**3.54** (2.2-5.7) 52/50
Loneliness at prim. school	ref. 15/160	1.75 (.93-3.3) 28/162	**2.98** (1.6-5.3) 69/213	**6.38** (3.5-11.4) 34/68
Bullied at second. school	ref. 26/149	.75 (.42-1.3) 21/169	1.19 (.72-1.9) 46/238	**2.36** (1.4-4.0) 34/68
Loneliness at second. school	ref. 25/150	1.28 (.76-2.1) 24/156	**1.70** (1.1-2.7) 63/222	**3.39** (2.1-5.6) 47/54

Note: CI = confidence interval; ref. = reference group. Significant RR in bold.
[a] Reference group: no CAN experienced.
[b] Adjusted for age and gender.
[c] Scores, > 1 on the ALEA questionnaire (0-1 = no case; 2-4 = case) were used as a cutoff for dichotomizing.

3. Results

3.1. Sample characteristics and exposure

In total, 809 participants were included in the present study, consisting of 372 men (46%) and 436 women (54%), with the average age of 27.6 years (SD = 10.5). Multiple CAN victimization in childhood was a common experience in the sample, as 628 (77.8%) had experienced CAN in childhood.

We found high rates of CAN for both males and females. Overall, 427 (52.9%) participants had experienced moderate to severe exposure (CTQ-SF). One hundred and eighty participants (22.0%) reported no CAN, 203 (25.1%) reported a low level of CAN, 313 (38.7%) reported a moderate level and 113 (14.9%) reported a severe level. More females (61.0%) than males (38.9%) reported no exposure to CAN (95% CI [± 7.13]), whereas there were no gender differences in exposure at the low (male: 50.2%; 95% CI [± 6.88]) or moderate (male: 51.8%; 95% CI [± 5.54]) levels. More females (65.5%) than males (34.5%) were exposed to severe levels of CAN (95% CI [± 8.76]).

3.2. School difficulties, hardship at school and adult adversity

The severity levels of CAN were strongly associated with the likelihood of hardship at school and adult adversity. The relative risk regression analysis showed that, after adjusting for gender and age, there was no statistical significant difference for CAN at low levels compared to the no CAN category (Table 1). Compared to individuals with no CAN exposure, the moderate and severe level groups of CAN had consistently higher risk ratios for a variety of learning difficulties (concentration; moderate RR 1.81, severe RR 2.51; reading; moderate RR 2.02, severe RR 3.17; writing; moderate RR 2.15, severe RR 5.34; and math; moderate RR 1.83, severe RR 2.38) and as being bullied (moderate RR 1.99, severe RR 3.54) and feeling lonely (moderate RR 2.98, severe RR 6.38) at primary school.

Moderate to severe levels of CAN were associated with a statistically significant increased risk of having experienced other potential traumatic events (PTE; witnessing others being exposed or family/friend having been exposed to a PTE). In the severe CAN category, witnessing psychological abuse yielded the highest risk ratio point estimates compared to the no CAN category (RR 5.1), followed by physical abuse (RR 3.8), life threatening incidents (RR 3.2) and serious injury (RR 2.3) (Table 2).

The occurrence of school difficulties, hardship at school and adult adversity had a graded relationship between the severity levels of CAN and later reported adversities, as presented in Fig. 1.

Table 2

: *Occurrence of PTE exposure and adjusted associations with severity of CAN.*

	Risk Ratio (95% CI) [a,b]			
	n = number of exposed (yes/no) n			
	Childhood Abuse or Neglect (CAN)			
	none n = 180	low n = 201	moderate n = 308	severe n = 111
Self witnessed[c]				
Physical Abuse	ref.	1.14 (.68-1.89)	**1.67** (1.07-2.62)	**3.81** (2.38-6.06)
	26/154	36/165	91/217	64/47
Psychological Abuse	ref.	1.47 (.86-2.53)	**2.28** (1.41-3.71)	**5.06** (3.06-8.38)
	21/159	37/164	92/216	65/46
Life Threatening incident	ref.	1.32 (.75-2.31)	1.63 (.98-2.72)	**3.27** (1.89-5.66)
	20/160	33/168	69/239	40/71
Serious Injury	ref.	.94 (.60-1.45)	1.21 (.82-1.79)	**2.31** (1.50-3.54)
	38/142	45/156	98/210	54/57
Family/friend experienced[c]				
Physical Abuse	ref.	1.34 (.76-2.38)	**2.18** (1.32-3.62)	**5.23** (3.12-8.78)
	20/160	31/170	78/230	63/48
Psychological Abuse	ref.	1.44 (.84-2.46)	**2.57** (1.60-4.13)	**4.93** (3.00-8.12)
	22/158	36/165	95/213	64/47
Life Threatening incident	ref.	1.03 (.58-1.82)	1.31 (.79-2.18)	**2.94** (1.72-5.02)
	22/158	27/174	56/252	42/69
Serious Injury	ref.	1.17 (.77-1.78)	1.39 (.95-2.04)	**2.05** (1.33-3.18)
	39/141	52/148	99/209	48/63
Early Death	ref.	1.08 (.77-1.50)	1.25 (.92-1.70)	**1.73** (1.21-2.47)
	71/109	27/108	165/143	71/40
Sudden Death	ref.	1.13 (.82-1.54)	1.22 (.91-1.62)	**1.48** (1.05-2.09)
	63/117	92/216	148/160	66/45

Note: CI = confidence interval; ref. = reference group. Significant RR in bold.
 [a] Reference group: no CAN experience.
 [b] Adjusted for age and gender.
 [c] Response, "yes" on the SC-PTSD questionnaire were used as a cutoff for the presence of exposure.
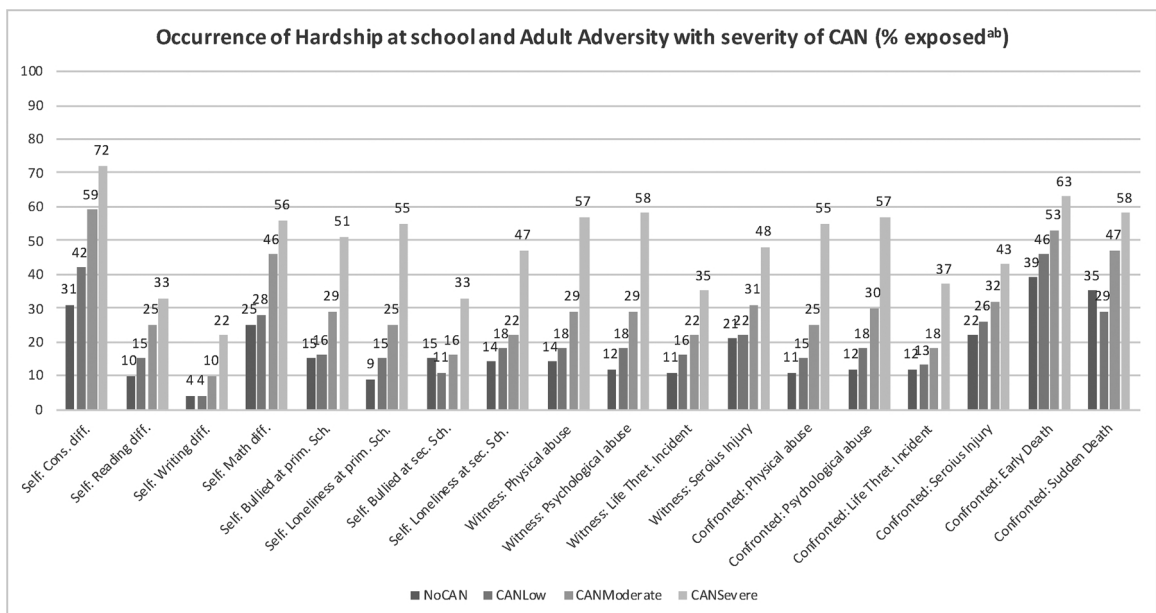

Fig. 1. Bar graph showing a graded relationship between severity levels of CAN and occurrence of adult adversity and hardship at school.
Note.
[a]Scores, > 1 on the SLEA questionnaire (response; 0 - 1 = no case; 2 - 4 = case) were used as a cutoff for dichotomizing.
[b]Response, "yes" SC-PTSD questionnaire was used as a cutoff for dichotomizing adult adversity.

Table 3

: Occurrence of Adult mental health and Adjusted Associations with Severity levels of CAN.

	Risk Ratio (95% CI)[a,b] n = number of exposed (yes/no) **nne2olonne5**			
	Childhood Abuse or Neglect (CAN)			
	none n = 180	low n = 202	moderate n = 312	severe n = 113
Somatization[c]	ref. 48/132	1.13 (.77-1.66) 59/143	**1.95** (1.40-2.72) 150/162	**2.90** (2.01-4.18) 82/31
Obsessive Comp.[c]	ref. 78/102	1.16 (.86-1.57) 101/ 101	**1.54** (1.18-2.03) 191/121	**1.79** (1.29-2.48) 77/36
Interpers. Sensit.[c]	ref. 49/131	**1.50** (1.05-2.14) 80/122	**2.09** (1.50-2.90) 158/154	**2.73** (1.88-3.96) 74/ 39
Depression[c]	ref. 80/100	1.08 (.80-1.46) 95/107	**1.56** (1.19-2.05) 191/121	**1.93** (1.40-2.64) 84/29
Anxiety[c]	ref. 68/112	**1.38** (1.01-1.87) 105/97	**1.80** (1.35-2.39) 198/114	**2.31** (1.67-3.19) 90/ 23
Hostility[c]	ref. 47/133	**1.47** (1.02-2.12) 76/126	**1.72** (1.22-2.43) 127/185	**2.32** (1.56-3.46) 57/56
Phobic Anxiety[c]	ref. 72/108	1.26 (.93-1.7) 103/99	**1.42** (1.07-1.89) 173/139	**1.93** (1.39-2.68) 83/ 30
Paranoid Ideat.[c]	ref. 37/143	**1.77** (1.19-2.64) 72/ 130	**2.66** (1.85-3.84) 160/152	**3.65** (2.44-5.46) 75/ 35
Psychoticism[c]	ref. 44/136	1.44 (.98-2.10) 69/133	**2.40** (1.70-3.37) 162/150	**3.20** (2.19-4.68) 78/35
GSIcase[d]	ref. 77/103	1.20 (.89-1.62) 101/101	**1.73** (1.32-2.27) 212/101	**2.04** (1.49-2.79) 90/23

Note: CI = confidence interval; ref. = reference group. Significant RR in bold.
[a] Reference group is respondents that have not reported any CAN.
[b] Adjusted for age and gender.
[c] Symptom scores above the clinical threshold defined as t-value ≥ 63 were used as a cutoff.
[d] Global Symptom Index, scores above the clinical threshold defined as t-value ≥ 63 (GSI rawscore, 0.74 (male) and 0.94 (female) were used as a cutoff.

3.3. Adult mental health

The results showed a statistically significant increase in risk ratios with increasing severity levels for all adult subscales of symptom scores above the clinical thresholds. We also found a cumulative pattern with increasing severity levels; for the low CAN level, there was only a statistically significant difference for the paranoid ideation subscale when compared to the no CAN level (Table 3).

4. Discussion

As hypothesized, we found a high rate of reported exposure to CAN at moderate to severe levels in this high-risk sample. Overall, more females were exposed to severe levels of CAN, whereas there were no gender differences for the low and moderate levels. The associations between CAN severity levels and experience of school difficulties, hardship at school, later adversities and mental health problems in our high-risk of trauma exposure sample indicate that moderate to severe levels of CAN yielded the highest risk for all outcomes, in line with other research (Archer, Pereira, & Power, 2017; Schilling et al., 2016).

The results showed a graded relationship between CAN severity levels and later adversities and symptoms of general psychological distress, which further adds support for the graded effect reported in several studies (Gilbert et al., 2009; Kessler et al., 2010). Exposure to severe levels of CAN was associated with a 2- to 6-fold increase in risk for learning difficulties, experiences of bullying and loneliness in primary and secondary school and a 2- to 5-fold increased risk of witnessing others be exposed to psychological, physical abuse, life-threatening incidents and serious injury. The elevated risk estimates from suggest that individuals exposed to moderate to severe levels of CAN have an overall higher risk for a range of later adversities than individuals with no or low levels of CAN exposure. Furthermore, these individuals had the most troublesome pathways in both increased frequency and risk for non-victimization exposures (e.g., loneliness, bullying, learning difficulties), and different potential traumatic events (e.g., witnessing physical abuse, psychological abuse) as well as higher risk for adult mental health symptoms. Considering the strong relationship between CAN and school difficulties, hardship at school and adult adversity, further underscore the need to establish appropriate routines for identifying such exposures in various clinical and high-risk groups. Our findings are consistent with the growing body of research that emphasizes the importance of considering a broad range of childhood maltreatment subtypes, and the associated adverse outcomes, among groups with high risk of exposure to CAN (Jud et al., 2016; Kessler et al., 2010). These findings add further support to the contention that part of the basis of polyvictimization is the exposure of victimization across multiple domains of the

child's life (Turner et al., 2017). This recognition of the influence of polyvictimization has been one of the growing trends in violence research (Hamby, McDonald, & Grych, 2014). As such, victimization includes different types of single adverse events as well as a life trajectory where the accumulation of negative exposures and increased risk of interpersonal polyvictimization and retraumatizing exposures, and mental health problems, is commonplace. This indicates a great need for "safe havens" that may help to strengthen the development of self-understanding, self-confidence, social, educational and practical skills and other positive experiences (Álvarez-Lister et al., 2016).

The following limitations should be considered. First, there are challenges regarding the validity of self-reported CAN without any supplementary or corroborating reports of the exposure. It is therefore likely that some of the observed associations could be influenced by difficult life situations and current mental health problems at the time of survey participation (Widom, 2019; Colman et al., 2016). This could lead to an overestimation of the strength of associations. However, as Hardt and Rutter (2004) showed that after using corroborated self- reports, false negatives were more frequent than false positives. To reduce the possible negative impact of retrospective reporting of CAN in this study, a well-validated instrument was employed, with behavior-specific formulation of items, along with the established cut- off points to categorize the different severity levels of maltreatment.

To sum up, the present study shows that severity levels of CAN are associated with increased risk of multiplicity of current and later adversities. Hamby et al. (2010) have argued that the field of violence research has tended to search for surface commonalities (e.g., domestic violence is linked to both child physical abuse and child neglect) and previous studies' applications of incident-specific approaches rather than assessing children's safety and developmental trajectory spanning across contexts and over time (Hamby et al., 2010). Our current results suggest that cumulative exposures and relationships between CAN and later adversities are important. Our findings should inform how data collections in this field are set up and should inform clinical approaches to at-risk populations (Ports, Ford, & Merrick, 2016).

In the present study we have documented that CAN is highly prevalent in high- risk groups and that experiencing greater severity of CAN was associated with a substantial increased risk for later adversities. Moreover, considering the high prevalence of CAN in this current sample, these findings further underscore the need to establish appropriate routines for identifying such exposures in various clinical and high- risk groups. The knowledge about the additive effects of severity levels of CAN, and prevention of only a single adversity among individuals exposed to multiple exposures may have questionable value (Kessler et al., 2010). Moreover, as, Hamby et al. (2018) argue, the field of violence practice and research have been delayed by disciplinary silos. At a societal level, early intervention to reduce the exposure to all childhood maltreatments is warranted, but also in the revision of practices, in education and in training of different agencies that consistently assess high-risk individual's safety in all contexts. At an individual level, targeting individuals with high risk of exposure to CAN will provide valuable information for developing interventions to reduce the negative long-term risk for PV. Our findings may lend further support to the need for a more individualized approach that comprehensively assess all exposures to CAN and assesses adversities to strengthen those affected.

Funding details

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