



Original article

Posttraumatic stress and youth violence perpetration: A population-based cross-sectional study

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ABSTRACT

Background: Exposure to trauma was found to increase later violent behaviours in youth but the underlying psychopathological mechanisms are unclear. This study aimed to test whether posttraumatic stress disorder (PTSD) is related to violent behaviours and whether PTSD symptoms mediate the relationship between the number of trauma experiences and violent behaviours in adolescents.

Method: The present study is based on a nationally representative sample of 9th grade students with 3434 boys (mean age = 15.5 years) and 3194 girls (mean age = 15.5 years) in Switzerland. Lifetime exposure to traumatic events and current PTSD were assessed by the use of the University of California at Los Angeles Posttraumatic Stress Disorder Reaction Index (UCLA-RI). Logistic regression was used to assess associations between PTSD and violent behaviours, and structural equation modelling (SEM) was used to examine the mediation effects of PTSD.

Results: PTSD (boys: OR = 7.9; girls: OR = 5.5) was strongly related to violent behaviours. PTSD symptoms partially mediated the association between trauma exposure and violent behaviours in boys but not in girls. PTSD symptoms of dysphoric arousal were positively related to violent behaviours in both genders. Anxious arousal symptoms were negatively related to violent behaviours in boys but not in girls.

Conclusions: In addition to trauma, posttraumatic stress is related to violent outcomes. However, specific symptom clusters of PTSD seem differently related to violent behaviours and they do not fully explain a trauma-violence link. Specific interventions to improve emotion regulation skills may be useful particularly in boys with elevated PTSD dysphoric arousal in order to break up the cycle of violence.

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1. Introduction

With prevalence rates between 60–92%, exposure to family or community violence (victimisation and witnessing) is common among juvenile offenders [1–4]. Persistent and repeated adverse childhood experiences were found to have a serious impact on brain functioning [5] and to negatively affect a child's mental health [6], but also to increase the risk for later violent behaviours

[7,8]. Not only interpersonal forms of violence but also other forms of trauma (e.g. natural disasters) seem to increase aggressive behaviours in youth [9,10] and more diverse forms of adverse experiences may have a cumulative effect on violent perpetration [11].

Little research has addressed the developmental mechanisms of trauma exposure and subsequent violent perpetration by addressing mental health disorders [9]. In adult veterans, posttraumatic stress disorder (PTSD) was consistently found to predict later violent behaviours [12,13]. In youth, PTSD has not been specifically investigated as a risk factor for violent behaviours. However, some recent findings suggest that PTSD is of importance when

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understanding youth violent perpetration. For example, PTSD was reported by 11–32% of adolescent detainees [1,14] but only by 4% of community adolescents [15]. Furthermore, the number of PTSD symptoms was related to adolescents' antisocial behaviours [16,17]. Finally, some studies tested the role of PTSD as a mediator between trauma exposure and violent behaviours in youth, but revealed rather inconsistent findings [10,18–22]. A study among 1358 urban US youth found that PTSD partially mediated the relationship between violence exposure and violence perpetration in boys but not in girls [20]. Except for the study by Ruchkin et al. [20], most of the previous studies on PTSD and its relation to youth violence: (a) were based on small and non-representative samples with limited generalizability of the findings, (b) did not consider multiple forms of trauma experiences, (c) did not use comprehensive statistics to test mediation, and (d) did not control for other trauma-related covariates such as other mental health problems and substance use. Therefore, additional studies using large community samples that include assessments of multiple potentially traumatic events are necessary to overcome some of the limitations mentioned above.

The present study had two aims: First, to test whether PTSD is associated with an increased presence of violent behaviours in a nationally representative sample of adolescent boys and girls. Secondly, to test whether PTSD symptoms fully or partially mediate the relationship between a cumulative trauma score and committed violent behaviours. Given the previous findings on a cumulative effect of different adverse childhood experiences [11,23], we assumed a dose-response relationship between the number of trauma experiences and violence perpetration. In addition, the specific associations of PTSD symptoms of re-experiencing, avoidance, numbing, dysphoric arousal and anxious arousal were analysed in regard to the presence of violent behaviours while controlling for mental health problems and substance use (i.e., alcohol, cannabis, and hard drugs).

2. Method

2.1. Participants and procedures

The present study was based on a nationally representative sample of 9th grade students attending public schools in Switzerland. From September 2009 to May 2010, data were anonymously collected using computer-assisted self-report questionnaires. Study design and procedures were published previously in detail [15,24,25]. The final sample consisted of 177 schools with 449 classes. Due to the absence of some students because of illness ($n = 537$) and students' individual refusals ($n = 63$), 6841 students participated in the survey (response rate = 91.9%). Due to computer-related problems, 15 questionnaires subsequently were lost and 39 questionnaires excluded because of invalid data. A further 159 participants were excluded because of missing data on mental health problem scales ($n = 122$, see below) and/or violent behaviour items ($n = 37$). Therefore, the final sample consisted of 6628 participants (total response rate 89.1%; 3434 boys, 3194 girls). The study was approved by ethics committees and departments of education from 25 cantons and 177 schools that were included in the present study (lead ethic committee of the Canton Zurich, ref. 54/08). All students who were included in the study provided informed consent.

2.2. Measures

2.2.1. Demographic variables

Parental education was assessed using two items measuring paternal and maternal education on 5-point Likert scales ranging from 1 (= no vocational training) to 5 (= a university degree).

Paternal and maternal scores were added up to create a single summation score. If one parent's education level was unknown, the other parent's score was doubled. If education level was reported for neither parent, the score was coded as 'missing'. Parental education was categorised as 'low' if the summation score had a value of two or three. Living area was coded as 'urban' if the participant was living in a community with more than 50,000 residents.

2.2.2. Trauma and PTSD

Trauma exposure and PTSD symptoms were assessed by a computerised form of the Adolescent Version of the University of California Los Angeles PTSD Reaction Index (UCLA-RI), a widely used self-report tool to assess PTSD in adolescence [26]. Trauma exposure according to DSM-IV criteria was assessed through 13 items with a yes/no answer format (more details on the frequency and type of trauma events is given in a previous publication based on the same sample [15]). The presence of PTSD was coded according to DSM-IV criteria including the DSM-IV requirement of functional impairment (see [15] for further description). A cumulative trauma exposure score was built based on the presence of all 13 items reflecting the number of potentially traumatic events (PTE). PTSD symptoms from DSM-IV clusters re-experiencing (criterion B), avoidance (criterion C) and hyperarousal (criterion D) were rated on a 5-point Likert scale ranging from 0 (= none of the time) to 4 (= most of the time). Based on our interest in dysphoric arousal and numbing, we further considered PTSD symptom clusters that have recently been found in factor analyses of the UCLA-RI (re-experiencing, avoidance, emotional numbing, dysphoric arousal and anxious arousal) [27]. PTSD symptom scores (frequency plus severity) were calculated (total score and subscale scores). The UCLA-RI has demonstrated excellent internal consistency and good convergent validity ([26] $r = .82$ compared to the Child and Adolescent Version of the Clinician-Administered PTSD Scale [28] and $r = .70$ compared to the PTSD module of the Schedule for Affective Disorders and Schizophrenia for School-Age Children [29]). The internal consistency of the UCLA-RI in the present study was similar to the figures reported in the original manual (Cronbach's $\alpha = .87$).

2.2.3. Violent behaviour

Violent behaviour was assessed using self-reports on four dichotomous items of physical and three dichotomous items of sexual violence. Participants were asked if they had ever (a) physically assaulted/attacked another person, (b) committed a robbery, (c) threatened someone with a weapon, (d) used a weapon to hurt someone, (e) forced someone else to undress himself/herself, (f) touched someone else's private parts against their will and (g) forced someone else into sexual activities. Internal consistency of the violent behaviour scale was acceptable (Cronbach's $\alpha = .63$). As expected, the resulting scale was strongly skewed (skewness = 1.79, $SE = 0.04$) with the majority of youth reporting none or one violent behaviour ($n = 5493$, 82.9%). For logistic regression analyses, the violent behaviour scale was dichotomised with scores of two and higher considered as present.

2.2.4. Mental health problems

Mental health problems were assessed by the self-report version of the Strengths and Difficulties Questionnaire (SDQ). This measure of mental health problems in children aged 11–17 contains 20 items relating to emotional problems, conduct problems, hyperactivity, and peer problems [30]. Reliability and validity of the instrument were found to be sufficient [31]. In the present analyses, scores falling within the clinical range defined in the manual were considered clinically relevant.

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