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Adverse childhood experiences and their impact on frequency, severity, and the individual function of nonsuicidal self-injury in youth

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ABSTRACT

This study aimed to investigate a specific relationship between nonsuicidal self-injury (NSSI) and a variety of adverse childhood experiences (ACEs) over and above childhood abuse and their impact on frequency, severity, and functions of NSSI. A sample of 125 inpatients (aged 13 to 26) was consecutively recruited within a psychiatric university hospital. Frequency, methods and functions of NSSI were assessed by the Functional Assessment of Self-Mutilation (FASM), ACEs were assessed by the Childhood Experiences of Care and Abuse Questionnaire (CECA.Q). The 12 month prevalence of NSSI in this representative, clinical sample was 60.0%. Engagement in NSSI was significantly related to ACEs with highest associations for maternal antipathy and neglect. Whilst ACEs were not associated with frequency or severity of NSSI, some ACEs were significantly related to the automatic functions of NSSI (e.g., affect regulation, anti-dissociative function or self-punishment) as well as to a peer identification function. NSSI represents a frequent phenomenon among young clinical populations and seems to be specifically related to ACEs with maternal antipathy or neglect commonly featured over and above experiences of abuse. Since ACEs also influence the functions of NSSI such factors need to be examined as part of clinical care planning.

1. Introduction

Nonsuicidal self-injury (NSSI) is the deliberate, direct destruction or alteration of body tissue without conscious suicidal intent (Lloyd-Richardson et al., 2007). NSSI most commonly occurs during adolescence and epidemiological research shows lifetime prevalence rates of 13%–45% in adolescents (Ross and Heath, 2002; Brunner et al., 2007; Lloyd-Richardson et al., 2007; Plener et al., 2009; Nock, 2010). There seem to be different groups of self-injuring adolescents: One group may engage in occasional NSSI for a circumscribed period while another group engages in repetitive self-harm often accompanied with severe emotional problems (Brunner et al., 2007). This has been confirmed by psychological subtyping which demonstrated different classes of self-injuring individuals with respect to psychopathology and frequency of NSSI (Whitlock et al., 2008; Stanford and Jones, 2009). Therefore, frequency of NSSI is likely to be an important characteristic for the classification of NSSI in the new Diagnostic and Statistical Manual of Mental Disorders (DSM-5) (American Psychiatric Association, 2010). The most commonly used method of self-injury is self-cutting with a sharp implement such as a knife or razor (Favazza, 1996; Nock and Prinstein, 2004; Klonsky and Muehlenkamp, 2007), but other common methods include self-scratching or scraping, self-burning, or self-hitting (Nock, 2010). Occasionally, a differentiation between severe and minor self-injury has been made according to the methods used for NSSI (Favazza, 1996; Lloyd-Richardson et al., 2007).

Previous research has described different functions of NSSI. A literature review showed that affect-regulation and self-punishment functions were reported most commonly, but anti-dissociative, anti-suicidal and interpersonal functions were also described (Klonsky, 2007). Nock and Prinstein (2004, 2005) outlined a four factor model in which NSSI is positively or negatively reinforced by either intrapersonal (so called "automatic") or interpersonal (so called "social") motives. These four functions represent potential individual motivating and reinforcing variables of NSSI which may be responsible for the occurrence and also for the maintenance of such behaviour.

Findings from both clinical and community samples support the role of adverse childhood experiences (ACEs) in the aetiology of NSSI. Up to 79% of adult self-injurers report a childhood history of abuse or neglect (Gratz et al., 2002). However, as ACEs also represent

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a risk-factor for the majority of other psychiatric disorders, there is still an open question regarding the specificity of types of ACEs in relation to NSSI (Klonsky and Moyer, 2008). Additionally, most studies of NSSI have highlighted the role of abuse in childhood (sexual or physical abuse) with relatively few focusing on other distortions in parent–child relationships and attachment. It has been argued that the observed relations between child abuse and NSSI may be due to the influence of high-risk family environments associated with abuse, rather than abuse per se (Nash et al., 1993). Recent research identified difficulties within families and parents' high expressed emotions (Wedig and Nock, 2007; Hawton and Harriss, 2008) as well as diminished quality of parent–child relationships (Bureau et al., 2010; Martin et al., 2011) as important risk factors of NSSI; and alienation from parents due to parental criticism has been suggested as a key component in the development of NSSI (Yates et al., 2008). Thus, there is a need for studies that investigate a broad range of ACEs in NSSI, with comparison made to other psychiatric ill adolescents.

Brunner et al. (2007) showed that adolescents engaging in repetitive NSSI were most likely to present severe psychopathology. Taking psychopathology as a potential link between ACEs and NSSI, severe childhood adversity might be associated with more frequent episodes of NSSI, which has previously been reported (Yates et al., 2008) or a higher severity of NSSI. Recent research has identified more complex relationships between experiences of child maltreatment and deliberate self-harm showing that additional factors may serve as important mediators (Weierich and Nock, 2008; Glassman et al., 2007; Muehlenkamp et al., 2010). It has been argued that NSSI occurs as a maladaptive coping mechanism in intense negative emotional response to ACEs which the individual is unable to control, manage or diffuse (Linehan, 1993). Muehlenkamp et al. (2010) recently reported that emotion regulation difficulties may mediate the relationship between ACEs and NSSI. Also, dissociation seems to be strongly related to childhood abuse (Mulder et al., 1998; Wachter et al., 2009), and a recent study reported symptoms of posttraumatic stress disorder (PTSD), such as re-experiencing or numbing, as mediators between ACEs and NSSI (Weierich and Nock, 2008). Additionally, punishment and guilt associations are frequent in victims of abuse, and Glassman et al. (2007) have found a strong mediating role of self-criticism in the development of NSSI. Therefore, ACEs might be particularly associated with the so-called automatic or intra-individual functions of NSSI (Nock and Prinstein, 2004), such as affect-regulation function, anti-dissociative function, and self-punishment function (Klonsky, 2007).

Given the current state of knowledge the following hypotheses are formulated: first, prevalence of ACEs in a clinical sample of adolescents will be significantly higher among patients engaging in NSSI compared to the clinical control patients. Second, antipathy and neglect will show highest associations with NSSI. Third, higher frequency and higher severity of NSSI will be related to ACEs. And fourth, individual functions of NSSI will be related to ACEs; specifically, the automatic functions of NSSI will be more common in self-injuring adolescent with a history of ACEs.

2. Methods

2.1. Recruitment, study sample and study procedure

All participants, 13–26 years of age, were consecutively recruited from psychiatric in-patient units for youth at the University Hospital of Heidelberg, Germany from November 2008 to September 2009. A total of 176 patients received treatment during this period. Of these, 37 patients were excluded due to the presence of acute psychotic symptoms, IQ lower than 75, insufficient knowledge of the German language, or acute crisis admission for no longer than two days. Thus, 139 in-patients were asked to participate in the study, 14 refused participation, and a final sample of 125 young in-patients completed the full assessment. This participation rate of 71.0% of the hospitals' young in-patients during this period can therefore be taken as representative for our clinic, which is a typical maximum care psychiatric hospital in Germany.

The study was approved by the institutional review board of the Medical Faculty, University of Heidelberg. After informed and written consent of patients and their parents/caregivers (if applicable), participants were given an appointment to privately fill the questionnaires. These were subsequently given to an independent study manager and anonymised.

2.2. Psychological assessment

Clinical diagnoses according to the ICD-10 diagnostic criteria were established by consensus between two child and adolescent psychiatrists. Frequency, methods and functions of self-reported NSSI were assessed by the Functional Assessment of Self-Mutilation (FASM) (Lloyd et al., 1997). The FASM has been used in several studies and shows fair internal consistency (α=0.65–0.66) (Guertin et al., 2001). 'Occasional NSSI' was defined as at least one incident of NSSI during the last 12 months; 'repetitive NSSI' was defined as five or more incidents of NSSI in the last 12 months, in line with the proposed criteria for the DSM-5 (American Psychiatric Association, 2010). Severe NSSI was defined as self-cutting, burning, self-tattooing, scraping, and erasing the skin. 'Mild NSSI' was defined as self-hitting, pulling hair, biting self, inserting objects under nails or skin, picking at a wound, or picking areas to draw blood. These definitions were used following Lloyd et al. (1997) who developed the FASM. The internal consistency within our sample was α=0.78 for the overall scale, α=0.68 for the severe subscale, and α=0.60 for the mild subscale. Affect regulation items included 'to stop bad feelings' and 'to feel relaxed'. Self-punishment items included 'to punish yourself'. Finally, anti-dissociative items included 'to relieve feeling "numb" or empty' and 'to feel something even if it was pain'. All of these items have been shown to load either on the "automatic negative function" or the "automatic positive function" in the FASM, as described by Nock and Prinstein (2004).

ACEs were assessed by the Childhood Experiences of Care and Abuse Questionnaire (CECA.Q), developed by Bifulco et al. (2005) from the corresponding CECA interview (Bifulco et al., 1994). This questionnaire comprises scales and corresponding cut-offs for severe instances of different ACEs with a strong focus on experiences within the family environment. It includes Likert poor care scales involving neglect and antipathy separately from both mother and father figures. Physical abuse from either parent figure, as well as sexual abuse from any perpetrator is also determined. It thus combines classic traumatic experiences with negative bonding experiences for each caregiver before the age of 17. Within the CECA.Q, neglect is defined in terms of parent's disinterest in material care (feeding and clothing), health, schoolwork, and friendships and antipathy is defined as hostility, coldness, or rejection shown to the child by parents or surrogate parents, including 'scapegoating' behaviour. Physical abuse is defined in terms of hitting by parents or other caregivers, and sexual abuse involves physical contact or approach of a sexual nature by any adult to the child (Bifulco et al., 2005). Both, the CECA.Q and the CECA interview were translated and validated by the authors during the same study; the CECA.Q showed good internal consistency (Crohnbach's alpha from 0.80 to 0.92) and re-test reliability (Cohen's k from 0.78 to 0.93), as well as overall significant correlations with the CECA interview (from r=0.58 to r=0.78) (Kaess et al., 2011).

2.3. Statistical analyses

Descriptive statistics were calculated for both groups. Age differences between groups were tested by an independent sample t-test, categorical variables were analysed using chi-square tests. Univariate and multivariate logistic regressions were calculated with the NSSI group as dependent variable and ACEs and gender as explanatory variables. A subsequent stepwise reduction of the regression model was conducted in order to minimize the Bayes Information Criterion (BIC). Thus, ACEs with lower independent effect on the dependent variable were gradually taken out of the model. The BIC allows for a comparison of models according to their estimated ability to predict new data (Schwarz, 1978). Pearson correlations were calculated to describe the interrelation of ACEs. Further calculations were performed for the NSSI group alone: multivariate regression analyses were calculated with both frequency and severity of NSSI as dependent variables and ACEs and gender as explanatory variables. Additionally, factor analysis was performed on the self-reported reasons for NSSI and the associations between the resulting factors and ACEs were calculated using univariate and multivariate regression following stepwise linear regression analysis.

3. Results

3.1. Prevalence of NSSI and sociodemographic characteristics

The final study sample comprised 125 adolescent/young adult patients with a mean age of 17.1 years (S.D.=3.1); 63 (50.4%) were female and 62 (49.6%) were male. Fifty patients (40.0%) had