**The relationship between childhood traumatic events, social support, and mental health problems in prisoners**

**Abstract**

This study examined the prevalence of childhood traumatic events, social support levels as well as mental health problems, to test for differences between traumatized and non-traumatized individuals, and to investigate the aforementioned parameters in a sample of 49 prisoners in Switzerland. This cross-sectional study used standardized self-report measurements. In line with expectations, prisoners reported a high rate of traumatic events. Furthermore, results indicated that those traumatized differed from those non-traumatized regarding the level of social support, interpersonal sensitivity, and depression. However, no relationship between childhood traumatic events and social support as well as mental health problems was found. This points to specific therapeutic needs of those traumatized, and to the necessity of a trauma-informed correctional care. Moreover, these study results are a further step into more integrated models of criminal behavior.

**Background**

It is a well-established finding that the rate of childhood traumatic events (CTE) is exceptionally high in prisoners (e. g. Baglivio, Epps, Swartz, Hu, Sheer, & Hardt, 2014; Krammer, Linder, Covington, Peper, & Klecha, 2015; Moloney, van den Bergh, & Moller, 2009; Urbaniok, Endrass, Noll, Vetter, & Rossegger, 2007). Such events may lead to an array of adverse consequences. Among them, there are links with criminological parameters, namely with antisocial personality (Kopp, Spitzer, Kuwert, Barnow, Orlob, Lüth, et al., 2009), aggressiveness (Liu, 2011), anger (Schützwohl & Maercker, 2000), and violent acts (Dutton & Hart, 1992). Being traumatized has been shown to increase the likelihood of becoming a serious, violent, and chronic offender (Baglivio, Wolff, Piquero, & Epps, 2015), to predict reoffending (Taylor, 2015), risk-taking behavior (Bellis, Lowey, Leckenby, Hughes, & Harrison, 2013; Hillis, Anda, Dube, Felitti, Marchbanks, & Marks, 2004), and to be a precursor for a pathway to crime (Salisbury & van Voorhis, 2009). Furthermore, traumatic events may not only cause posttraumatic stress disorder (PTSD), but may also contribute to the development of further mental health problems, especially depression (Bloom and Covington, 2008; Carr, Martins, Stingel, Lemgruber, & Juruena, 2013). Thereby, mental health problems (MHP) contribute to a “vicious circle”: prisoners suffering from an increased rate of MHP compared to the general population (Coolidge, Marle, van Horn, & Segal, 2011; Fazel & Seewald, 2012), which have repeatedly been shown to be associated with increased delinquency. For example, depressive symptoms have been shown to be correlated with an increased risk for violent crimes (Fazel, Wolf, Chang, Larsson, Goodwin, & Lichtenstein, 2015).

The cycle of violence theory (COV; Widom, 1989) aims at explaining such links. It states that who is victimized may subsequently victimize others, and thus postulates a cycle of violence. Despite some evidence regarding this theory (e. g. Maxfield & Widom, 1996), further modulating factors regarding the association of CTE and MHP remain unclear. It is very likely that there are further variables that impact this pathway. An intervening core factor discussed in trauma research is social support (SUP; e.g. Prati & Pietrantoni, 2009; Kaniasty & Norris, 2008; Sperry & Widom, 2013). For example, a meta-analytic review including 103 studies investigated salutogenic factors that may prevent maladjustment in the aftermath of traumatic events by promoting posttraumatic growth, and identified SUP as a relevant factor (Prati & Pietrantoni, 2009). It is defined as any interaction between two or more individuals that aims at solving or soothing a problematic state (Knoll & Schwarzer, 2005). The importance of social-interpersonal factors has also been highlighted by the socio-interpersonal context model (SIC; Maercker & Horn, 2013) that postulates that socio-interpersonal factors have a strong impact on posttraumatic adjustment.

However, there is limited knowledge about this salutogenic mechanisms regarding people involved in the criminal justice system, where, as already stated, high rates of CTE and MHP have been reported. In general, those studies that did focus on this group reported similar effects for prisoners as for the general population. Scilicet, in former political prisoners, SUP positively influenced posttraumatic symptoms (Krammer, Fankhauser, Gäbler, Schützwohl, & Maercker, 2013), and reduced anger (Schützwohl & Maercker, 2000). Further, victims of childhood abuse, who received maternal support, presented lower risks of offending as adults compared to those, who did not receive this support (Teague, Mazerolle, Legosz, & Sanderson, 2008). SUP may also decrease feelings of hostility upon release (Hochstetler, DeLisi, & Pratt, 2010), and higher levels of it during imprisonment were found to be associated with lower levels of reoffending after release (Cochran, 2013). On the basis of such findings, some scholars argued that SUP plays an important role in the prevention of crimes (Colvin, Cullen, & Ven, 2002). However, some studies contradicted this. For example, in a sample of adjudicated youth, those with CTE had more rearrests irrespective of their social bonds than those with no CTE (Craig, Baglivio, Wolff, Piquero, & Epps, 2017), and in recently released offenders, those that experienced victimization were at higher stakes for recidivism regardless of their level of family support (Taylor, 2015). On the basis of this, a number of questions still remain unanswered regarding SUP in prisoners.

Thus, evidence indicates that prisoners are affected by high rates of CTE and numerous MHPs, and that SUP may prevent MHPs after CTE, but findings so far are inconclusive. The present study aims to shed further light on this by pursuing the following goals. First, the prevalence of CTE, SUP, and MHP will be investigated in a prisoners’ sample in order to identify the scope of the problem. Second, differences between traumatized and non-traumatized individuals regarding the level of SUP and MHP will be assessed. Based on the aforementioned previous studies, it is expected that traumatized individuals score significantly lower on SUP and higher on MHP. Third, it was aimed to investigate the relationship between these three variables. In line with previous studies, it is expected that there are significant correlations between CTE, SUP, and MHP. Finally, the prediction of SUP and MHP, respectively, by CTE was assessed.

**Methods**

***Procedure and participants***

The study sample includes 49 incarcerated men from a men’s only prison in the German-speaking part of Switzerland. After positive evaluation of the study procedure by the local ethics committee, the files of all prisoners were screened for potentially eligible participants at two time points six months apart. Inclusion criteria were German language, no current risk for self or other harm, and informed consent. In total, n=222 files were screened, and n=101 were excluded because of not meeting study requirements (fig. 1). N=121 prisoners were met in person in order to provide information about the study, to ascertain inclusion criteria, and, if the candidate was eligible, to ask for participation. N=72 were eligible and gave informed consent. N=12 dropped out during the interval between the initial meeting and assessment, which took place during the following days, and a further N=11 were not eligible or willing to participate nevertheless. So, the males’ sample was comprised of 49 incarcerated men.

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Data collection took place in small groups with 5-10 prisoners, took one hour, and was paper-pencil-based. Informed consent was obtained from each participant prior to participation. Assessments were accompanied by two research members in order to guide and answer questions. None of the study participants benefitted from study participation, besides the fact that it took place during working hours.

***Measures***

Data was collected by means of the following standardized self-report measures that were applied in German language. Additionally, sociodemographic and offense-related information were extracted from prisoners’ files.

Adverse Childhood Experiences Scale (ACE; Felitti, Anda, Nordenberg, Williamson, Spitz, Edwards, et al., 1998). This has 10 items and retrospectively assesses traumatic (5 items: emotional, physical, and sexual abuse, emotional and physical neglect) and aversive events (5 items) during childhood. Items are answered dichotomously with 0 (never happened) or 1 (happened). For the present analyses, solely the five traumatic events were used, both as a sum score (from 0 to 5) and as specific events. Previous studies have shown that the ACE has good psychometric properties (Felitti et al., 1998). At present, Cronbach Alpha for the trauma score was .68.

Symptom Checklist Revised (SCL-90-R; Franke, 2002). This has 90 items and assesses nine MHP that were experienced within the previous seven days, namely somatization, obsessive-compulsiveness, interpersonal sensitivity, depression, anxiety, aggressiveness, phobia, paranoid ideation, and psychoticism. Here, the sum score as well as subscales were analyzed. Psychometric properties of the SCL-90-R are good (Franke, 2002), currently, the Cronbach Alpha was .97.

Social Support Inventory (SSI; Kendel, Spaderna, Sieverding, Dunkel, Lehmkuhl, Hetzer, et al., 2011). This assesses current perceived emotional SUP with five items. Answers are provided on a 5-step Likert scale (0: does not apply – 4: applies totally). For the current study, the sum score was used. Previous studies pointed to good psychometric properties (Kendel et al., 2011), which was also the case in the current study: Cronbach Alpha = .82.

***Statistical analysis***

Missing values were seldom (2.82%). Regarding SUP and MHP, single items were estimated by means of multiple imputations, which is recommended for missing data handling (e.g . Schlomer, Bauman, & Card, 2010). All analyses were performed with IBM SPSS (Version 24). T-tests were used to test for differences. Bivariate correlations (Pearsons’ r and Spearmans’ r) were performed to test for associations between CTE, SUP, and MHP. Results were analyzed one-sided. Bonferroni correction was performed. The potential influence of age and duration of imprisonment on CTE, SUP, and MHP was tested by conducting bivariate correlations. As there were only low correlations, correlational analyses were conducted without these covariates. Two hierarchical regression analyses tested for the prediction of SUP and MHP, respectively, by CTE.

**Results**

***Sample***

All 49 participants were male. The age of the participants ranged from 23 to 66 years (M = 40.1, SD = 10.8). Slightly more than one third was of Swiss nationality (36.7%). More than two thirds were not in a steady relationship (69.4%). Currently, N = 21 (42.9%) undergo psychotherapy, while N = 18 (36.7%) did so previously at some point in their lives. Regarding mental health disorders, F6 were most often diagnosed (69.2%), followed by F1 (57.7%). Most often, drug offenses were committed (38.7%), followed by theft (36.7%) and homicide (24.5%). Table 1 provides further sociodemographic and on offense-related characteristics.

\*\*\*Table 1 here\*\*\*

***Prevalence of traumatic events, social support, and mental health problems***

About three fifths of the prisoners reported having experienced at least one CTE (N = 30, 61.2%). On average, 1.5 CTE were reported (SD = 1.5). Among those traumatized, 23.3% reported one, 20.0% two, 46.7% three, 6.7% four, and 3.3% five CTE. Most often, emotional abuse was reported (51%), followed by physical abuse (40.8%), emotional neglect (28.6%), physical neglect (18.4%), and sexual abuse (12.2%). Table 2 presents means and standard deviations of all parameters.

\*\*\*Table 2 here\*\*\*

***Differences between prisoners with and without traumatic events***

A series of t-tests was performed to test for group differences. Significant differences to the disadvantage of those traumatized were found regarding the level of SUP (M = 3.28, SD = 1.00 versus M = 4.14, SD = .90; T = 3.03, p < .01), interpersonal sensitivity (M = .85, SD = .70 vs. M = .50, SD = .46; T = -2.12, p < .05), and depression (M = 1.14, SD = .67 vs. M = .63, SD = .69; T = -2.52, p < .05).

***Correlational analyses***

According to a series of bivariate correlational analyses, the CTE score was significantly related with the level of SUP (p < .001), general MHP (p < .05) and two specific MHPs (depression: p < .01; somatization: p < .05; tab. 3). Regarding the five specific trauma types investigated, all types except sexual abuse were significantly correlated with the level of SUP (p < .05/01). Physical neglect is the trauma type that most often correlated with MHP: besides with general MHP (p < .01), it also correlated with depression and psychoticism (p < .01), somatization, obsessive-compulsiveness, and anxiety (p < .05). SUP levels were correlated with a series of MHPs, besides with the general score (p < .05), also with obsessive-compulsiveness and depression (p < .01), somatization, and paranoid ideation (p < .05). Both specific CTE and MHP were highly intercorrelated. However, after Bonferroni correction, most associations between CTE, SUP, and MHP were no longer significant, except for the relationship between SUP and CTE score (r = -.49, p < .001), and a series of intercorrelations.

\*\*\*Table 3 here\*\*\*

***Prediction of SUP and MHP, respectively, by CTE***

In order to test CTE as a predictor for the outcomes SUP and MHP, respectively, two hierarchical multiple linear regression analyses were performed (tab. 4). Age was entered at step 1, the criterion – either SUP or MHP – was entered at step 2. At step 1, age did not significantly contribute to the explanation of SUP (F = .15, p = .700, R2 = -.02) and MHP (F = .42, p = .520, R2 = -.01), respectively. The introduction of CTE significantly contributed a meaningful percentage of variance to SUP (ΔR2 = .24, F = 7.53, p = .001) and in a lesser extent to MHP (ΔR2 = .08, F = 2.30, p = .112).

\*\*\*Table 4 here\*\*\*

**Discussion**

This study aimed at investigating the prevalence of childhood traumatic events (CTE), social support (SUP), and mental health problems (MHP), to test for differences between traumatized and non-traumatized individuals, to investigate the relationship between CTE, SUP, and MHP, and to test the prediction of SUP and MHP by CTE in a Swiss sample of 49 male prisoners. Generally, in line with expectations, high rates of traumatic events as well as differences between traumatized and non-traumatized individuals were found, namely regarding the level of social support, interpersonal sensitivity, and depression. Furthermore, an association between CTE and SUP was verified, but not between CTE and SUP with MHP. CTE indeed predicted SUP well, and to a lesser extent MHP.

As expected, this sample reported high rates of childhood traumatic events. This was fairly in line with previous research (Baglivio et al., 2014; Krammer et al., 2015; Moloney et al., 2009; Urbaniok et al., 2007). In fact, two thirds of the prisoners reported at least one such event that fulfils the trauma criterion according to the World Health Organization (WHO, 1992), and among those traumatized, three quarters experienced more than one event and may thus be described as multiple traumatized. Previous research has indicated that experiencing multiple traumatic events may lead to more severe sequelae and maladjustment, i.e. there is evidence for a dose-response-relationship (e. g. Turner, Shattuck, Finkelhor, & Hamby, 2016). This has not only been shown for mental maladjustment, but also for criminological parameters, with more severely and multiple traumatized individuals showing more severe offending behaviour (e. g. Davis, Masters, Casey, Kajumulo, Norris, & George, 2015). Consequently, it is likely that male prisoners, like female prisoners (Krammer et al., 2015; Moloney et al., 2009), are in need of specific, trauma-informed interventions, which ideally disrupt the chain of events that may have been initiated by childhood traumatic events (e. g. Salisbury & van Voorhis, 2009).

Another expected finding was the significant association between CTE and SUP, as well as the prediction of SUP by CTE, which means that more traumatic events in childhood led to lower levels of perceived social support. Furthermore, traumatized individuals reported lower levels of SUP and higher levels of interpersonal sensitivity than non-traumatized individuals, and in fact, the latter individuals reported similar levels of SUP as was previously found in the general population (Kendel et al., 2011). Up to some extent, this highlights the detrimental impact of CTE on social resources, as previously indicated by the socio-interpersonal context model (SIC; Maercker & Horn, 2013), and points to a specific treatment need of those traumatized. Consequently, according to this data, while non-traumatized prisoners will probably hardly benefit from intramural efforts to improve their SUP levels, as this is comparable to non-imprisoned individuals, this seems to be different regarding traumatized individuals. In order to improve their level of SUP, social competence trainings or systemic therapies may be implemented. Especially the latter seems promising. Systemic therapies integrate the family and social context of the offender into therapy. This way, SUP levels during imprisonment may be enhanced, the social reception room upon release may be improved, and sensitivity for difficult peer relationships, which are known to be risk factors for recidivism (e. g. Salisbury & van Voorhis, 2009) may be promoted. Actually, in line with previous suggestions (e. g. Colvin et al., 2002), this may support the reduction of recidivism upon prison release.

From a theoretical point of view, it might be conceivable that social factors are the element that is missing in the COV model. Speculating, these factors might bridge the gap between CTE, MHP, and offending behaviour. Tentatively, this points to the necessity of more integrated models that combine the promising, but yet not far-reaching enough approach by the COV model (Widom, 1989) with elements of the SIC model (Maercker & Horn, 2013). The development of models that truly fit and portray the actual risks and needs of prisoners is a prerequisite for an evidence-based correctional-care and therapeutic interventions. The present findings might add a small, but further stone in this mosaic.

Those traumatized differed from those not-traumatized not only regarding their social resources, but also regarding depression. In fact, this has previously been described as mental health problem that follows traumatic events most often, i.e. even more often than PTSD (Bloom & Covington, 2008). Despite the fact that this underlines the reliability of this data, it points to a further need of those traumatized that must be addressed during imprisonment. This is not only important in order to reduce suffering of those traumatized individuals affected, but also because there is evidence for depression to be associated with offending (Fazel et al., 2015).

Alongside psychotherapeutic interventions that address traumatic events and their sequelae, the development of more trauma-informed correctional care is also of importance (Miller & Najavits, 2012). Prisons are full of cues that may trigger trauma-related memories and that may threaten the stability of trauma-afflicted prisoners. Among them, there is reduction of privacy, restrained movement, and body searches. Prisons that are trauma-informed may minimize re-traumatization and promote adjustment and stability by avoiding trauma-triggering cues. Part of a trauma-informed correctional care is the measurement of such needs upon prison entrance. Recognition, acknowledgment and identification of those in need is the first step towards trauma-informed and trauma-sensitive correctional care. Measuring these needs and the subsequent therapeutic consequences should be part of a standard assessment upon entrance. Indeed, there is now some evidence for an improvement of functioning in individuals with CTE after receiving trauma-focused cognitive behavioural therapy or prescription of the synthetic cannabinoid nabilone even in a prison setting (Cameron, Watson, & Robinson, 2014; Campbell, Albert, Jarrett, Byrne, Roberts, Phillip, et al., 2016).

Contrary to expectations (e. g. Carr et al., 2013), no significant associations between CTE and MHPs were found, and rather slight evidence for the prediction of MHP by CTE. This result is in need of explanation. First, it is conceivable that those prisoners that participated in this study were probably not those suffering the most from MHPs, leading to a floor effect. Those that suffered from MHPs might have refused to participate. Indeed, by looking at the recruitment flow, almost half of those generally eligible for study participation refused to participate. It is very likely that this has resulted in a selection bias. Second, participants may have underestimated their MHPs as a result of fearing article 59 if authorities find out about their MHPs (e. g. Schwarzenegger, Hug, & Jositsch, 2007). In Switzerland, article 59 is reserved for those criminals that committed their crime as a result of a mental health disorder. Those assigned an article 59 will be imprisoned for at least five years, independent of the original sentence, this can even be extended, and those affected have to undergo psychotherapy. On the basis of personal discussions with prisoners, fearing article 59 is common. So may be, fearing this, participants did not disclose their real state of mind. Third, currently, two fifths of the participants were in psychotherapy. It is conceivable that this stabilised those in need, which resulted in low endorsement of MHPs, and those without a psychotherapeutic need were in a low state regarding MHPs anyway.

Although this research has numerous strengths, several limitations must be reflected. First, it was cross-sectional so causality cannot be established. If indeed CTE impacts SS or if it is the other way round, namely that SS impacts the memory of CTE cannot be guaranteed. Second, less than 50% of the eligible prisoners participated in this study, which is a significant weakness that likely gives rise to selection bias. Third, sample size was rather low. Despite substantial effort it was not possible to recruit further study participants. Forth, no female prisoners were included in the study and so the study’s findings only apply to male prisoners.

Despite these limitations, this study sheds further light on the significance of traumatic events in childhood, social support levels, and mental health problems of male prisoners in Switzerland. It points to the necessity of implementing more specific therapies for those traumatized and highlights the remarkable relationship between traumatic events and social resources. Future studies ought to further address this with longitudinal and more powerful studies.

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