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Childhood maltreatment as risk factor for lifetime depression: The role of different types of experiences and sensitive periods

Jelena Gerke[a,b,1], Alexandra Maria Koenig[a,1], Daniela Conrad[a,c], Cornelia Doyen-Waldecker[a,d], Markus Pauly[e], Harald Gündel[d], Sarah Wilker[a], Iris-Tatjana Kolassa[a,*]

[a] Clinical & Biological Psychology, Institute of Psychology and Education, Ulm University, Ulm, Germany
[b] Department of Child and Adolescent Psychiatry and Psychotherapy, University Hospital Ulm, Ulm, Germany
[c] Clinical Psychology and Neuropsychology, Department of Psychology, University of Konstanz, Konstanz, Germany
[d] Department of Psychosomatic Medicine and Psychotherapy, University Hospital Ulm, Ulm, Germany
[e] Institute of Statistics, Ulm University, Ulm, Germany

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ABSTRACT

Childhood maltreatment (CM) is associated with a higher risk for the development of lifetime major depressive disorder (MDD). Initial evidence further suggests a significant role of type and timing of CM on mental health. Thus, this study aimed at investigating which particular subtypes of CM at which age of exposure are the best predictors for the development of lifetime MDD. Three months postpartum, $N = 285$ women were interviewed with the German interview version of the *Maltreatment and Abuse Chronology of Exposure Scale* which allows a broad and differentiated assessment of CM and enables the assessment of ages at which CM occured. Lifetime MDD was diagnosed with the *Structured Clinical Interview* for mental disorders according to the *Diagnostic and Statistical Manual of Mental Disorders (5th ed.; DSM-5)*. To identify the strongest predictor, random forest analyses embedded in a conditional inference framework were applied. Analyses revealed that emotional subtypes of CM by parents, experienced during adolescence, showed the strongest prediction for lifetime MDD. Furthermore, women with a lifetime diagnosis of MDD reported a significantly greater CM severity, more different subtypes of CM, and a longer duration of CM compared to women without lifetime MDD. Given the "neglect" of emotional CM in previous studies, emotional neglect and abuse should be considered more frequently in the prevention and treatment of MDD.

1. Introduction

Childhood maltreatment (CM) is a serious public health problem all over the world (Akmatov, 2011). According to a representative study, one in seven children in Germany has experienced severe child abuse or neglect at some point in his/her life (Häuser, Schmutzer, Brähler, & Glaesmer, 2011) – with detrimental consequences for the child's health that can last into adulthood. More specific, experiences of CM are associated with lower physical functioning, poorer general health, and adverse mental health consequences (Herrenkohl, Hong, Klika, Herrenkohl, & Russo, 2013).

In particular, increased prevalence rates of major depressive disorder (MDD) were linked to a history of CM (Li, D'Arcy, & Meng, 2016). Additionally, a history of CM led to an elevated risk for the development of recurrent and persistent depressive episodes as well as to a generally diminished treatment outcome in a recent meta-analysis (Nanni, Uher, & Danese, 2012). The severity of CM influences the occurrence and course of subsequent depressive disorders suggesting a dose-response relationship (e.g., Bifulco, Moran, Baines, Bunn, & Stanford, 2002; Chapman et al., 2004). This cumulative effect of the *severity* of CM was previously termed *maltreatment load* (Schury & Kolassa, 2012). In addition, *multi-type maltreatment* (experience of more than one CM subtype) also led to a higher risk of mental health problems (Edwards, Holden, Felitti, & Anda, 2003) and psychological symptoms, e.g., hopelessness regarding the own future (Arata, Langhinrichsen-Rohling, Bowers, & O'Brien, 2007).

Besides maltreatment load and the number of different CM subtypes, the risk of developing certain mental disorders might be

* Correspondence to: Clinical & Biological Psychology, Institute of Psychology and Education, Ulm University, Albert-Einstein-Allee 47, 89081 Ulm, Germany.
E-mail addresses: jelena.gerke@posteo.de (J. Gerke), alexandra.koenig@uni-ulm.de (A.M. Koenig), daniela.conrad@uni-konstanz.de (D. Conrad), cdoyenwaldecker@me.com (C. Doyen-Waldecker), markus.pauly@uni-ulm.de (M. Pauly), harald.guendel@uniklinik-ulm.de (H. Gündel), sarah.wilker@uni-ulm.de (S. Wilker), iris.kolassa@uni-ulm.de (I.-T. Kolassa).
[1] These authors contributed equally to this paper.

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differently influenced by specific subtypes of CM (physical, sexual, and emotional abuse as well as physical, and emotional neglect). However, no consensus exists on which types of CM specifically predict MDD in adulthood. In a recent systematic review, sexual and physical abuse were frequently associated with mood disorders, whereas emotional abuse was linked to the occurrence of personality disorders and schizophrenia (Carr, Martins, Stingel, Lemgruber, & Juruena, 2013). Other studies have highlighted emotional abuse (Gibb, Chelminski, & Zimmerman, 2007) and neglect (Spinhoven et al., 2010) as the most significant predictors of MDD rather than physical and sexual abuse. However, in contrast to physical and sexual abuse, the consequences of emotional subtypes of CM have more rarely been investigated. In the last decade, a growing body of research focused on the consequences of emotional abuse and neglect for the development of depressive disorders (see meta-analyses of Norman et al., 2012, and Infurna et al., 2016). Nevertheless, the impact of emotional abuse on MDD might still be underestimated so far.

In addition to the type of CM, the timing of CM might have an impact on the development of subsequent mental disorders, most notably if CM is experienced during sensitive developmental periods. In this regard, CM might lead to maladaptation across biological and psychological domains of development (Cicchetti & Toth, 2005), leading to the likely development of subsequent psychopathologies and emotional distress (Dunn, McLaughlin, Slopen, Rosand, & Smoller, 2013; Kaplow & Widom, 2007). Research by Teicher, Samson, Anderson, and Ohashi (2016) even suggested alterations in brain structure, function and connectivity following CM exposure in sensitive periods (for a review see Teicher et al., 2016). Particularly in sensitive periods, positive relationship experiences and secure attachment to significant persons are essential to prevent negative mental health outcomes (Kerns & Brumariu, 2014; Moretti & Peled, 2004). Several studies indicated an association of an early onset (before age of 5) of physical and sexual abuse with higher depressive symptoms in adulthood (e.g., Kaplow & Widom, 2007; Schoedl et al., 2010). However, none of these studies considered emotional abuse. Furthermore, most of the studies only asked for the *onset* of CM rather than assessing the age (s) of exposure or the duration in more detail; thus, differences might exist within the group of participants reporting maltreatment early in life (Kaplow & Widom, 2007; Schoedl et al., 2010). One study including emotional abuse and assessing the age of occurrence rather than just the age of onset showed that depressive symptoms later in life were more strongly related to CM experiences in adolescence (age 12 and older) than to CM exposure at younger ages (Thornberry, Ireland, & Smith, 2001). A potential explanation for this finding might be that abuse or neglect during adolescence whether by parents, peers or others, might be more detrimental compared to abuse in early childhood. As with further developed cognitive abilities, and greater autonomy and maturity, victimized adolescents seem to be more aware of the meaning of the maltreatment compared to victimized children (Kaplow & Widom, 2007).

Nevertheless, research taking type *and* timing of CM into account is scarce. Only two retrospective studies exist that recently investigated depression as a function of both, type and timing of CM. Khan et al. (2015) analyzed how the experience of ten different CM subtypes influences the risk for the development of MDD in a community sample of males and females. CM subtypes were assessed with the *Maltreatment and Abuse Chronology of Exposure Scale* (MACE; Teicher & Parigger, 2015) that covers each year of childhood through to adolescence, i.e., from birth to 18 years of age, to test the influence of different CM subtypes during sensitive periods. Non-verbal emotional abuse in males and peer emotional abuse in females, both at age 14, were the most important predictors for lifetime MDD. The second most important predictor was emotional neglect at the age of 12 for both genders. Moreover, Khan et al. (2015) reported that these predictors, i.e., type and timing of CM, were more important in the prediction of depression than the number of different CM types or the maltreatment load. Schalinski et al. (2016) also compared the importance of the number of different CM types to the importance of type and timing of CM with regard to the prediction of current symptoms of depression, dissociation, and posttraumatic stress in adult inpatients. A dose-dependent effect of the number of different CM types was found for psychiatric symptoms; however, findings indicated that specific combinations of type and timing resulted in better predictions of current symptoms of depression than the number of types of CM and the maltreatment load, respectively. In particular, current depressive symptoms were predicted best by the experience of emotional neglect at ages eight and nine (Schalinski et al., 2016).

1.1. Objective

While many studies have focused on the sequelae of CM, a growing body of research proposes to focus on the consequences of particular types of CM and developmental stages, in which CM has occurred. Initial evidence points towards a significant role of type and timing of CM exposure, predicting adverse health outcomes beyond the dose-dependent effect of maltreatment load (Khan et al., 2015; Schalinski et al., 2016; Teicher & Samson, 2013). Thus, this study aimed at 1) replicating a higher maltreatment load in women with lifetime MDD compared to women without a history of MDD, and 2) investigating whether particular types and the timing of CM were associated with an increased risk for lifetime MDD development. Apart from the most frequently investigated types of CM, i.e., physical and sexual abuse, we additionally assessed emotional abuse, physical, and emotional neglect, emotional, and physical violence through peers, and witnessed domestic violence. With this very detailed assessment, the intention of this paper was to analyze *which of the different CM subtypes* is the strongest predictor for lifetime MDD. Finally, the study investigated whether certain CM subtypes *at specific ages* are more important risk factors for the development of lifetime MDD than others.

2. Material and methods

2.1. Participants, procedure, and study design

Participants were recruited within the project “My Childhood – Your Childhood” (Oct 2013–Dec 2016) that aimed at investigating risk and resilience factors in the transgenerational transmission of CM in a community sample of mother-infant-dyads. Measurement points of this project included data collections shortly after childbirth (t0; Oct 2013–Dec 2015), three months postpartum (t1; Jan 2014–April 2016), and one year postpartum (t2; Oct 2014–Dec 2016). However, only data from t0 and t1 were used in this study. All procedures followed the Declaration of Helsinki and were approved by the Ethics Committee of Ulm University. Project exclusion criteria were insufficient ability to understand and speak the German language, severe complications during childbirth, any severe physical or mental health problems of mother or child, and maternal age below 18 years. At the Department of Obstetrics and Gynecology of Ulm University Hospital, all women who gave birth to a child between October 2013 and December 2015 (t0) were asked for participation in the project. In total, 548 women were willing to participate in the study and gave written informed consent prior to study participation. Before an initial screening could take place, 15 mothers withdrew study participation. Thus, first data were assessed of 533 women (t0), including socio-demographics and CM experiences (German version of the *Childhood Trauma Questionnaire* (CTQ); Bader, Hänny, Schäfer, Neuckel, & Kuhl, 2009; Bernstein & Fink, 1998). Three months postpartum (t1), 285 of the initially screened sample of 533 women participated in a follow-up interview. To acknowledge the special emotional condition of women in the postpartum period, CM experiences were assessed in an interview to be able to respond immediately in case of distress. Besides asking for demographic characteristics, trained psychologists interviewed these women using the