



Preface for the special issue “The consequences of childhood maltreatment on mental and physical health”



Childhood maltreatment is related to aberrant mental and physical health outcomes in childhood (e.g., Flaherty et al., 2006) and in adulthood (e.g., Felitti et al., 1998). Even though adversities are not necessary for diseases, childhood maltreatment is highly common in physical and mental disorders and presents an etiological risk factor for illnesses across the lifespan. The vast amount of findings has stimulated research on psychological and biological trajectories of how childhood maltreatment gets embedded into our systems and, thereby, increasing the risk for disease across the lifetime. Childhood maltreatment has been suggested to be an important variable leading to distinct ecophenotypes (Teicher & Samson, 2013) that determine the risk, modulate the severity of disease, as well as its course.

In this issue, three articles focus on the consequences of childhood maltreatment in children and adolescents.

The first article by Symanzik et al. (2019) reports a longitudinal study of interpersonal difficulties in children living with foster parents (with previous exposure to maltreatment and neglect) compared to children living with their biological families (without severe forms of maltreatment). Over one year, three measurements were obtained of symptoms of reactive attachment disorder as well as indiscriminate, insecure, and pseudomature behavior. Across all assessments, foster parents reported higher symptoms of reactive attachment disorders as well as further interpersonal problems of the child compared to biological parents, while the overall severity of interpersonal difficulties declined over time. This study demonstrates that even after the removal from adverse conditions, difficulties persist over time and may indicate trajectories to later disease.

In a cross-sectional study, Nkuba, Hermenau and Hecker (2019) examined the relationship between exposure to adverse childhood experiences and social deviant behavior (such as delinquent and rule breaking behavior) in a representative sample of adolescents ($N = 700$) from Tanzania. The exposure to maltreatment both at school and at home were associated with more severe socially deviant behavior. The findings demonstrate the aberrant consequences of maltreatment at school as well as at home and may inform preventive strategies targeting behaviors of parents and teachers.

Foran, Jansen, Kuhn, Restle and Hahlweg (2019) report a longitudinal study of parental aggressive behavior, child's mental health, and adolescent's health outcome 10 years later. While parental aggression predicted child's symptoms of internalization and externalization, the latter set the individual at risk for aberrant adolescent's health outcome. The results demonstrated that the consequences of childhood maltreatment are not limited to the time of its occurrence, but also related to aberrant long-term trajectories to poor health. In particular, mental health was pointed out as a

psychological link between childhood maltreatment and later physical health.

Furthermore, four articles focus on the relationship between childhood maltreatment and mental illness later in adulthood.

Gerke et al. (2018) clarified the specific role of types of maltreatment during developmental periods on the lifetime risk of depression in postpartum women. The results pointed to a stronger impact of emotional neglect and abuse in adolescence compared to other types of adversities for an increased risk of lifetime depression. Results support the notion of stress sensitive periods for depressive disorder.

Steffen-Klatt, Fiess, Beckh, Schmidt and Rockstroh (2019) studied the sensitizing effect of difficulties in identifying and describing one's own emotions (alexithymia) in the relationship between childhood maltreatment and various psychopathologies (functional neurological symptoms, depressive and trauma-related symptoms). Findings support the notion of a broad liability to adult psychopathologies upon exposure to childhood maltreatment. Furthermore, difficulties in one's own emotional processing may be a key psychological domain in the sensitizing effect of childhood maltreatment on the severity of psychopathology in adulthood.

Hirt, Schalinski and Rockstroh (2019) examined the relationship of childhood abuse and neglect for severity of symptoms in schizophrenia and those at risk for the disease. Additionally, a marker of endocrine function “hair cortisol concentration” was used capturing aggregated levels of cortisol over the course of the last 3 months. More severe symptoms were evident in individuals with higher exposure to childhood maltreatment. Correlations between exposure to early abuse and lower hair cortisol concentration, as well as lower hair cortisol and more severe positive symptoms may indicate how childhood maltreatment sensitizes for unfolding psychopathology.

Thekkumthala et al. (2019) examined the relationship of childhood maltreatment, symptoms of borderline personality disorders, and balance performance as an indirect indicator for cerebellar processing. This article describes a hypothesis-generating pilot study, and reported a positive relationship between symptoms of borderline personality disorder and balance performance. Potential neurobiological pathways explaining this relationship are discussed in the article.

Inflammatory processes as well as their interaction with the hypothalamic-pituitary-adrenal axis might play a central role in stress-related trajectories for adverse health outcomes. Geiger et al. (2019) focused on the interface between exposure to childhood maltreatment, cortisol signaling, and the pro-inflammatory phenotype. For this purpose peripheral blood mononuclear cells of postpartum women with and without childhood maltreatment were treated ex vivo with cortisol, the anti-glucocorticoid hormone dehydroepiandrosterone as well as

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with both while the pro-inflammatory cytokine release was measured. Results show differential responding of the blood cells towards the treatment of cortisol and the combination of cortisol and dehydroepiandrosterone in women with childhood maltreatment compared to women without. Results indicate that childhood maltreatment is associated with long-term consequences for the immune system, in particular states of chronic latent inflammation.

Conclusion and future directions

Childhood maltreatment is related to a broad range of aberrant health outcomes. However, the types of childhood maltreatment at certain developmental stages may contribute more specifically to outcomes as shown in this issue. Scrutinizing the effects of type of experiences during the development is critically important to understand “what” modifies outcomes, and further informs mechanistic research questions on “how” experience contribute to outcomes. As shown in this issue, childhood maltreatment seems to have long-term effects on chronic low-level inflammation that may contribute to the multitude of negative outcomes observed across several contributions in this special issue. Even though, the relationship between childhood maltreatment and psychoneurobiological alterations has been well characterized (e.g., brain structure and functioning: see reviews by Teicher & Samson, 2016; Teicher, Samson, Anderson & Ohashi, 2016; immune system: see a review by Danese & Baldwin, 2017; and neuroendocrine system: see reviews by Kuhlman, Chiang, Horn & Bower, 2017; Strüber, Strüber & Roth, 2014), the interaction between these systems as well as the precise developmental trajectories remain unclear. The articles of this issue show that the consequences of childhood maltreatment demonstrate sufficiently to call for the consideration in diagnostic assessment in routine care as well as to include it as a critically important variable for research in mental and physical illnesses. As is it currently not clear how to reverse these psychoneurobiological consequences and whether they can be reversed at all, future studies need to focus on all levels of prevention. Childhood maltreatment is supposed to be the most avoidable cause of illness, and thus justifies strategies such as interventions to reduce its occurrence in general (campaigns to raise the awareness of the consequences of maltreatment on health, parent education programs), routine assessments in individuals with poor illness as well as adjustments of treatment strategies. In particular, the understanding of neurobiological consequences of childhood maltreatment may prove crucial in developing individualized, more effective interventions strategies that reverse long-term negative health outcomes.

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