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Journal of Human Behavior in the Social Environment

ISSN: 1091-1359 (Print) 1540-3556 (Online) Journal homepage: www.tandfonline.com/journals/whum20

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To cite this article: Heather Dye (2018) The impact and long-term effects of childhood trauma, Journal of Human Behavior in the Social Environment, 28:3, 381-392, DOI: 10.1080/10911359.2018.1435328

To link to this article: https://doi.org/10.1080/10911359.2018.1435328

JOURNAL OF HUMAN BEHAVIOR IN THE SOCIAL ENVIRONMENT
2018, VOL. 28, NO. 3, 381–392
https://doi.org/10.1080/10911359.2018.1435328

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The impact and long-term effects of childhood trauma

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ABSTRACT

This article discusses early childhood trauma and the negative long-term consequences that can cause life-long medical and psychological deficiencies. Early childhood trauma, especially complex trauma, can cause neurobiological changes that impact human development and cause significant changes in brain function. These changes in brain structures are responsible for cognitive and physical functioning. Empirical evidence suggests that childhood trauma is associated with physical, mental, and emotional symptoms that can persist into adulthood. This article examines the impact of trauma exposure; neurologically, physiologically, and psychologically. The long-term consequences of trauma exposure, such as substance abuse, incarceration, and co-occurring psychiatric problems are discussed along with the importance of recognizing protective factors, examining resiliency, and identifying empirically based treatment modalities to help alleviate symptoms of trauma survivors.

KEYWORDS

Early childhood trauma; consequences of trauma; treatment for trauma

Introduction to trauma

There is a growing body of literature with mounting evidence showing that exposure to trauma during childhood has long-term consequences (Spataro, Mullen, Burgess, Wells, & Moss, 2004). According to the American Psychiatric Association (APA, 2000), trauma is described as a perceived experience that threatens injury, death, or physical integrity and causes feelings of fear, terror, and helplessness. Exposure to traumatic experiences are widespread and do not discriminate against gender, age, race, ethnicity, or sexual orientation. These experiences may occur during a single event (acute) or as a result of repeated (chronic) exposure (American Psychiatric Association, 2000). Traumatic events include abuse, violence, neglect, loss, accidents, disasters, war, and other emotionally harmful experiences (American Psychiatric Association, 2000). Exposure to childhood trauma has been linked to childhood and adult psychopathology, including attention deficit and hyperactive disorder (ADHD), depression and anxiety, personality disorders (Cummings, Berkowitz, & Scribano, 2012) a profound effect of cognitive, social, and emotional competencies (Enoch, 2011) and an increased risk for chronic diseases (Dong et al., 2004). According to Edwards, Holden, Felitti, and Anda (2003), the negative effects of trauma during childhood can persist into adulthood; thus, research shows that adults who experienced trauma as children have higher risks of physical and psychological problems.

The sequelae of trauma, as identified by *The Diagnostic and Statistical Manuel of Mental Disorders* (5th ed.; DSM-5; American Psychiatric Association, 2013) includes a

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diagnosis of post-traumatic stress disorder (PTSD). The diagnosis of PTSD was historically characterized as an anxiety disorder in the DSM-IV. PTSD was grouped under anxiety disorders due to sharing many similar symptoms with other types of anxiety disorders (Friedman, 2013). However, due to trauma and symptom complexity, the DSM-5 now includes PTSD in a new chapter called, Trauma-and-Stress-or-Related Disorders (TSRD). "A new stand-alone chapter Trauma-and-Stress-or-Related Disorders (TSRD), reflects the current deeper understanding of the heterogeneous symptom presentation of stress-related conditions" (Nemeroff et al., 2013, p. 5). In addition to the greater understanding of complex trauma and symptomology, the DSM-5 now includes four symptom clusters rather than three; with more attention to behavioral symptoms that accompany PTSD (Nemeroff et al., 2013). The DSM-5 recognizes the persistent reactivity in all the domains of self-regulation, such as emotional regulation, interpersonal regulation, and sense of self or identify (Friedman, 2013). An additional cluster of symptoms was added, *negative alterations in cognitions and mood* due to the development of maladaptive thinking in reaction to the trauma that lead to negative self-cognitions and beliefs about oneself, negative world cognitions, and self-blame cognitions (Friedman, 2013) as well as symptoms of anger, guilt, or shame (Nemeroff et al., 2013). Also, the symptom cluster *alterations in arousal and reactivity* include the focus on emotional dysregulation symptoms such as aggressive, reckless, or self-destructive behaviors, hypervigilance, exaggerated startle response, concentration problems, and/or sleep disturbances (Friedman, 2013).

Complex trauma

Courtois (2008) report that researchers and practitioners working in childhood trauma have proposed a potential subtype of trauma referred to as complex trauma. Complex trauma refers to

> the exposure of multiple or chronic and prolonged, developmentally adverse traumatic events, most often of interpersonal nature and early-life onset. These exposures occur within the child's caregiving system and include physical, emotional and educational neglect and child maltreatment beginning in early childhood (Spinazzola et al., 2005, p. 433).

Exposure to complex trauma in childhood leads to increased symptom complexity (Cloitre et al., 2009) and is associated with greater impairment with cognitions (Najjar, Weller, Weisbrot, & Weller, 2008) physical awareness and dissociation (Courtois, 2008) affect regulation, interpersonal attachment, and behavior control (Cohen, Mannarino, Kliethermes, & Murray, 2012). According to Cloitre, Garvert, Brewin, Bryant, and Maercker (2013), complex trauma is more commonly found in individuals, both adults and children, who have severe and chronic trauma histories; however, cumulative trauma during childhood was by far the strongest contributor for symptom complexity. Karam et al. (2014) report that research shows an increasing number of different types of symptom complexity, with more complex traumas including symptoms such as emotional and interpersonal dysregulation, substance abuse, and suicidality.

Impact of trauma exposure

Research has provided evidence that exposure to trauma during childhood interrupts the developmental process of aging (Zlotnick et al., 2008), leaves the individual with life-long medical and psychological deficiencies (Stirling & Amaya-Jackson, 2008), and can lead to learned helplessness and exaggerated emotional distress (Davidson & McEwen, 2012). Early childhood traumas, such as abuse, neglect, and other emotionally harmful events, have a negative effect on early attachment relationships, especially if the abuser is the caregiver. When children experience relationships as rejecting or unsafe, these experiences can alter a child's perception of self, trust in others, and perception of the world.

Neurological disruptions

According to Nemeroff (2004), complex trauma, especially in early childhood, causes long-term neurobiological changes that impact human development and has significant effects on brain function. Putnam (2009) reports that early childhood abuse and neglect causes neurological and psychological development processes to be altered. Exposure to trauma has been shown to alter changes in the interrelated brain circuits and hormonal systems that regulate stress (Nemeroff, 2004). These changes to the brain can affect memory and impair information processing (Briere & Scott, 2006) and alter the hypothalamic-pituitary-adrenal (HPA) axis, which affects trauma survivors' ability to modulate behavioral and cognitive responses to subsequent stress (Nemeroff, 2004). After a threatening event is perceived, the HPA axis is activated causing an increase in the corticosteroids, which interact with cognitive functions as well as physical functions such as immunity and inflammation. The HPA is dysregulated by excessive release of corticosteroids due to chronic or severe stress (De Kloet, Sibug, Helmerhorst, & Schmidt, 2005). Children exposed to trauma are more vulnerable to overexposure to corticosteroid due to the brain continuing to develop. De Kloet et al. (2005) reports the dysregulation of the HPA axis contributes to hormonal abnormalities and higher prevalence of depression. Consequently, due to trauma, the brain structures responsible for regulating intense emotions are deactivated. So, re-experiencing stressors elevate emotional reaction and suppress emotional control and behaviors (De Kloet et al., 2005). According to Van Der Kolk (2014), survivors of trauma struggle with horrific memories, worries, and intrusive thoughts of the event as if they were still under threat. This response stores traumatic emotional memories in the brain that become trapped (Williams, 2006). Perry (2006) reports that trauma disrupts normal brain development in several key areas: the brainstem where stress-regulation, survival, and metabolism are regulated; the midbrain and diencephalon, which plays a role in sensory motor activity, sleep, and appetite; the limbic system, which regulates emotions, attachment, affiliation, mood, and pleasure; and the cortex, which is associated with cognition, language, and reasoning. Due to early childhood trauma, normal development and disruption in the brain creates incongruence between biological age and developmental age (Perry, 2006).

Physiological disruptions

The long-term effects of childhood trauma on health have been substantiated by numerous studies (Ford, 2005). According to Ford (2005), metabolic syndrome

(Mets) is a cluster of conditions such as abdominal obesity, high blood pressure, glucose intolerance, and low or high cholesterol. These conditions heighten an individual's risk of cardiovascular disease (CVD), coronary heart disease (CHD), and stroke. According to Dong et al. (2004), stressful life experiences during childhood increase the risk of chronic disease. Victims of childhood trauma and abuse are more likely to be obese, have hypertension (Greenfield & Marks, 2009) problems with sleep (Bader, Schafer, Schenkel, Nissen, & Schwander, 2007), and diabetes (Ford, 2005). Victims of child abuse have been found to have issues with obesity. Due to maladaptive coping strategies, trauma victims are more likely to engage in self-soothing techniques, such as overeating, to relieve emotional stress. Traumatized children are more likely to become "emotional eaters" to self-sooth negative emotions; thus, becoming a habit that may continue into adulthood (Ford, 2005). According to Greenfield and Marks (2009) and Ford (2005), these health issues can carry long-term negative consequences that may explain why victims of childhood trauma are at a greater risk of developing MetS. Ford (2005) reports that heart disease is among the leading cause of adult mortalities in the US.

Psychological disruptions

Comorbid psychiatric problems are common among survivors of trauma, including substance abuse (Enoch, 2011), depressive disorders, PTSD and mood disorders (Briere & Scott, 2006), anxiety disorders, self-injurious behaviors, and eating disorders (Yates, Carlson, & Egeland, 2008), attachment disorders, conduct disorders, personality disorders, aggression, crime, and suicidal behavior (Gilbert et al., 2009). The psychological disruptions for trauma survivors are severe and can have persistent, chronic long-term effects. Many children exposed to trauma suffer from developmental regressions; emotionally, cognitively, and behaviorally (Enoch, 2011). According to DeBellis, Hooper, and Sapia (2005), early childhood trauma is more detrimental than trauma experienced later in life due to the developmental processes that are occurring, neurologically and psychologically. Therefore, it is imperative to understand how trauma experiences can interfere with these processes and have long-lasting effects. "Traumatic events effect great damage not so much because of the immediate harm they cause but because of the lingering need to re-evaluate one's view of oneself and the world" (Condly, 2006, p. 211).

Briere and Jordan (2009) report that trauma survivors suffer from depression anxiety, anger, sensitivity to rejection, abandonment issues, unstable relationships, and difficulty with trust issues. Trauma victims suffer from PTSD, which include numerous symptoms. The DSM-5 includes four symptom clusters: intrusion, avoidance, negative alterations in cognitions and mood, and attention in arousal and reactivity (APA, 2013). The symptom cluster *alteration in arousal and reactivity* includes reckless or destructive behavior, aggression, sleep disturbances and hypervigilance that results from trauma experiences. The symptom cluster *negative alterations in cognitions and mood* include feelings such as distorted blame of self or others, persistent negative emotional estrangement from other diminished interest in activities, and memory problems associated with the trauma. These symptoms cause tremendous disruptions for trauma survivors.

Complexity in diagnosing trauma

According to Hawkins and Radcliffe (2006), "formal diagnoses of PTSD are not always available as there may be difficulty diagnosing PTSD given issues of dual diagnoses" (p. 421). A study by McLean (2004) examined childhood trauma with the diagnosis of borderline personality disorder (BPD) in adults. This study found that among those adults diagnosed with BPD, 81% of the sample had suffered from major childhood trauma, 71% had experienced physical abuse, 67% had suffered sexual abuse, and 62% had witnessed domestic violence. Van Der Kolk and Fisler (1994) found that adults who were diagnosed with BPD and had a history of self-harm, over 80% experienced childhood physical or sexual abuse and 90% had experienced parental neglect. As research has shown, child abuse often initiates a pattern of self-destructive behaviors. Adults diagnosed with BPD experience similar symptoms of PTSD with difficulties in self-regulation of affect, dissociation or numbed responses, changes in perception of self, and other mood changes.

A study conducted by Salzbrenner and Conaway (2009) discussed the overlap in symptoms of bipolar disorder and PTSD, which may lead to misdiagnosing. These authors discussed how symptoms such as hyperarousal, insomnia, and irritability could mimic hypomania in bipolar disorder, especially if a detailed patient history is not conducted. "Even in light of increased media coverage of PTSD and national awareness campaigns, data indicate that physicians' diagnosis of PTSD remain low relative to it's prevalence" (Salzbrenner & Conaway, 2009, p. 31).

Young children, especially those who have minimal verbal language, experience and perceive trauma exposure differently than adolescents or adults. Younger children struggle with limited linguistic abilities and are often unable to provide coherent accounts of the events as well as the cognitions to interpret the events (Najjar et al., 2008). Identifying and diagnosing children and youth with PTSD is complex and requires detailed attention to the child's age and developmental level as well as the type and duration of trauma experienced (Najjar et al., 2008). These authors discuss how a child or youth's developmental stage, cognitive level, verbal skills, perception, and interpretation of the incident is considerably different from an adult. Van Der Kolk (2005) reports that children and youth exposed to traumatic events are often diagnosed with separation anxiety disorder, oppositional defiant disorder (ODD), and attention deficit hyperactive disorder (ADHD); thus, PTSD is not the most common diagnosis for children and youth exposed to traumatic events. According to Ford and Courtois (2014), children may present with symptoms such as hypervigilance, hyperarousal, and aggressions, which are considered characteristic symptoms of ADHD and ODD. Children who exhibit the above behavioral symptoms are likely to be assessed for disordered behavior and not PTSD, which can lead to misdiagnosing.

Research shows it can be challenging to diagnose a history of childhood trauma among youth who struggle to communicate what has happened to them verbally but yet they respond to the world fearfully, even when they are safe (Van Der Kolk, 2006). These expressions of trauma-related incidence often manifest themselves differently in youth than in younger children or even adults. Symptoms can be embedded within or masked by other clinical presentations. Therefore, clinicians must be able to recognize the complexity of trauma in children, youth, and adults.

Consequences of trauma

A preponderance of empirical evidence suggests that chronic childhood trauma is associated with attachment impairments, behavioral control, interpersonal issues, limit setting, establishing healthy boundaries, poor cognitive skills, and high-risk behaviors (Enoch, 2011). Numerous studies have demonstrated a relationship between early childhood trauma and substance abuse/dependence. According to Enoch (2011), individuals who have experienced trauma are more vulnerable to using alcohol and drugs in order to cope with stressful situations. Research shows that some individuals rely on techniques focused on soothing their emotional responses to stress. Survivors of trauma often turn to substance use to "sedate or numb" the effects of traumatization (Enoch, 2011), to self-medicate in an effort to mediate painful memories and feelings associated with adverse events and situations (Wagner, Rizvi, & Harned, 2007).

> In a prospective study using court-documented and therefore presumably severe cases of childhood maltreatment (physical abuse, sexual abuse, and neglect experienced from 0-11 years), 33.5% of adolescents (up to age 18) and 56% of young adults (18 or older) who had experienced childhood maltreatment met criteria for alcohol or drug abuse or dependency. (Enoch, 2011, p. 24)

Research shows a high prevalence of those who have suffered trauma have been incarcerated. Wolf and Shi (2010) report that interpersonal trauma and the negative consequences are the "life history of incarcerated persons, and often continue while these individuals are incarcerated" (p. 313). Research suggests that drug-dependent female offenders "are more likely than male offenders to report extensive histories of emotional, physical, and sexual abuse—between 77% and 90%" (Messina, Grella, Burdon, & Prendergast, 2007, p. 1385). Incarcerated women are "roughly twice as likely to report histories of physical and sexual abuse as women in the general population" (Silberman, 2010, p. 798). A study conducted by Roe-Sepowitz (2008) found that 25 juveniles charged with homicide revealed that 96% came from chaotic backgrounds that included spousal and drug abuse at home and multiple transitions of caregivers. Also, this study found that 90% had been either physically or sexually abused by a family member. Wolf and Shi (2010) discuss how childhood interpersonal trauma increases the chances of both male and female involvement in the criminal justice system. These authors report correctional populations have higher rates of mental illness and childhood trauma compared to the general population.

Co-occurring psychiatric problems

Early childhood trauma experiences create a myriad and cumulative effect on the developing mind, brain, body, and inner self. Individuals who are survivors of childhood trauma suffer from increased stress responses and a variety of mental illness; many suffer from co-occurring disorders, which include mental illness and substance abuse. According to Jacobsen, Southwick, and Kosten (2001), among men with PTSD, alcohol abuse or dependence was the most common co-occurring disorder followed by depression, other anxiety disorders, and conduct disorder. These authors report "Among women with PTSD, rates of comorbid depression and other anxiety disorder are highest, followed by alcohol abuse and dependence" (p. 1184). Research shows a

complex nature of treating patients with co-morbid PTSD and substance abuse because clients struggle to maintain sobriety as well as working to heal from traumatic memories.

Factors that influence trauma

According to Sedlak et al. (2010), research has shown a combination of multiple risk factors that increase the likelihood of negative outcomes for children and youth who have witnessed or experienced trauma. Sedlak et al. (2010) report that childhood abuse may occur at all levels of socioeconomic status (SES), although higher rates have been documented in low income and impoverished family environments. Many times, low-income families suffer increased exposure to stressful circumstances, which include economic disadvantages, substance abuse, and domestic violence. Briggs-Gowan, Carter, and Ford (2011) found that younger children exposed to a traumatic event along with a combination of socio-demographic factors (e.g., poverty, minority status, single parenting, teenage parenting, limited education) are at a greater risk for mental illness. Also, children living in poor communities are more likely to be exposed to community and neighborhood violence, have poor emotional health, and low academic achievement. These factors along with parental dysfunction, family adversity, and problematic parenting can increase the impact of traumatic events (Briggs-Gowan et al., 2011).

According to Turner et al. (2012), there are protective factors that may help protect young children from the negative impact of exposure to trauma. Research shows that nurturing family relationships can protect children from the psychological distress associated with traumatic experiences. Research has shown that having nurturing parents, stable family relationships, adequate housing, basic needs met, and caring adults outside the family who can provide mentoring serve as protective factors (Turner et al., 2012). Factors such as safety, which implies that a child is free from harm or fear of harm, serves as a protective factor and foster a sense of physical, emotional, and mental well-being (Turner et al., 2012).

According to Wingo et al. (2010), researchers have strived to understand how some children and youth have shown they can thrive and overcome traumatic events and live a healthy and satisfying life as adults. In fact, research on resiliency was motivated by the possibility that protective factors identified could help prevent the long-term negative consequences of trauma. Resiliency is defined as "a quality of character, personality, and coping ability, which connotes strength, flexibility, a capacity for mastery, and resumption of normal functioning after excessive stress that challenges individual coping skills" (Agaibi & Wilson, 2005, p. 197). A person's resiliency can be understood as one bouncing back or adapting to risks that may or may not be unavoidable in life (Wingo et al., 2010).

According to Turner et al. (2012), research suggests that a child's temperament and I Q level can increase resilience and help with the ability to overcome traumatic circumstances. Also, family characteristics such as parental involvement, positive parental attitudes and relationships can give a sense of security needed to overcome traumatizing events. External supports such as community resources, religious institutions, and after-school programs can help children overcome negative outcomes associated with traumatic experiences (Turner et al., 2012). Again, these resilience factors are closely related to protective factors. Research shows when given the proper supports, children, youth, and adults can live healthy and avoid the negative physical, emotional, and behavioral consequences of traumatic experiences.

Evidence-based treatments

Research shows several evidence based methods used to treat trauma symptoms in children, youth, and adults. These evidence-based approaches are rooted in theory, evaluated scientifically, and yield positive treatment results (National Institute for Clinical Excellence [NICE], 2005). "Collaboration with patients regarding preferences about treatment structure, process, and outcomes will benefit the effectiveness and quality of treatments as well as the speed of their dissemination" (Cloitre, 2015).

According to Najjar et al. (2008), one of the most researched and evidenced based treatments used for trauma symptoms is the cognitive behavioral theory (CBT). CBT focuses on addressing and alleviating dysfunctional thoughts, behaviors, and emotional responses by teaching clients to regulate their feelings by changing their thoughts and behaviors. CBT addresses symptoms of re-experiencing avoidance and arousal; the hallmark symptoms of PTSD. CBT has been successful in treating symptoms of anxiety and arousal as well as improving psychoeducation and skill development (Najjar et al., 2008).

Trauma-Focused CBT (TF-CBT) is a psychosocial treatment that includes psychoeducation, parent skill development, relaxation, affective modulations, cognitive reprocessing, and creation of trauma narratives. This evidenced based treatment has been validated for children and parents (Cohen & Mannarino, 2008). Silverman et al. (2008) considered TF-CBT the only validated treatment to be "statistically significant superior to psychosocial placebo or to another treatment in at least two group-design experiments conducted in at least two independent research settings" (p. 160) and "the only well-established treatment for children exposed to traumatic events" (p. 162). TF-CBT has shown significant improvement in symptoms of PTSD, depression, behavioral problems, shame, and abuse-related attributions. However, some researchers argue that CBT approaches, like TF-CBT, cannot give "attention to the experiences and interpretation of disturbed physical sensations and preprogrammed physical action patterns" (Van Der Kolk, 2006, p. 282). Van Der Kolk (2006) argues that traumatic memories and emotional pain are programmed within the mind and body, which require somatically oriented therapies to address symptoms of hyperarousal, dissociation, and body awareness.

Eye movement Desensitization and Reprocessing (EMDR) is a treatment modality that focuses on the brain's information system and desensitizing the traumatic memory through bilateral stimulation (BLS) and short imagined exposure (Shapiro, 1989). In EMDR processing, all dimensions of the memories including the image, the thoughts, the emotions, and the body sensations are accessed through BLS (Shapiro, 1989). BLS, with either eye movements, auditory tones, tapping, or music activates the right and left hemispheres of the brain to access traumatic memory; therefore, causing duel attention to BLS while at the same time paying attention to the traumatic memory (Rodenburg, Benjamin, De Roos, Meijer, & Stams, 2009). The dual attention that is required during EMDR facilitates left and right hemispheric connection and disrupts the traumatic memory network. According to Rodenburg et al. (2009), meta-analysis of EMDR found that EMDR appears to be beneficial in helping the client to process overwhelming material as well as integrate new information. Other researchers have found EMDR to reduce PTSD symptoms (Ahmad, Larsson, & Sundelin-Wahlsten, 2007).

Dialectical Behavior Therapy (DBT) is a cognitive behavioral treatment developed by Marsha Linehan for individuals diagnosed with Borderline Personality Disorder (BPD).

Linehan (1993) developed the four skills sets of DBT to help relieve BPD symptoms; affect regulation, mindfulness, interpersonal effectiveness, and distress tolerance. As discussed previously in this article, BPD symptoms are similar to PTSD symptoms; thus, leading to misdiagnosing. The affect regulation skill set helps clients develop and maintain better control over reactive emotions associated with the trauma. Mindfulness skills teach clients to be in the present moment, take a nonjudgmental stance, and encourage body awareness. Interpersonal effectiveness skills help clients interact more effectively in relationships and helps with self-esteem and self-identity issues. Distress tolerance skills help clients learn more effective coping strategies to decrease anxiety, depression, and self-destructive behaviors. According to Wagner et al. (2007), DBT is used along with trauma-related disorders such as substance abuse, eating disorders, and anxiety disorders as well as "treat a complex and heterogeneous group" to create structure and bring calmness (p. 399). Research shows that DBT has been proven to help improve symptoms of trauma (Wagner et al., 2007).

In conclusion, exposure to trauma during childhood has long-term consequences that can persist into adulthood. The exposure to trauma during childhood can interrupt the developmental processes and cause life-long physical, mental, and emotional deficiencies. Research shows that trauma survivors can suffer from depression, anxiety, abandonment issues, unstable relationships, and other mental illnesses. Therefore, it is important for clinicians to understand better characterization of patient profiles and methodologies for successful treatment modalities to help alleviate symptoms of trauma survivors. Clinicians must work collaboratively with patients regarding treatment preferences to ensure that the outcomes will be more effective and successful.

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