

# Complex post-traumatic stress disorder (CPTSD), executive function and attachment

## Transtorno de estresse pós-traumático complexo (TEPT\_C), função executiva e apego

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*Studies conducted with children and adolescents suggest that long-term exposure to adverse events and the lack of emotional and psychosocial support can lead to complex traumatizing conditions (C\_PSP), providing difficulties that affect emotional regulation, cognition, interpersonal relationships and the constitution of identity. The aim of this essay is to reflect on about the cognitive, more specifically executive function abilities, emotional, and attachment dimensions in children, who have been exposed to the experience of violence.*

**Keywords:** CPSPT, attachment, executive function, childhood

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## Introduction

2 A trauma during childhood, including abuse (sexual, emotional, physical) and neglect (physical and emotional), is one of the most reliable predictors for the PTSD. Literature reviews (Dvir et al., 2014; Dar et al., 2015; Li and Seng, 2018; Shenk et al., 2014) have shown a direct association between trauma in childhood and PTSD. These works also show that children exposed to interpersonal traumatic stressors adverse to the development (e.g., mistreatment, family or long-term community violence, torture, exploration and genocide) are at risk of developing PTSD (D'Andrea et al., 2012; Ford, 2010), specially during the periods of personal formation (e.g., first childhood and teenagerhood). They are also more prone to present psychopathological comorbidities including the abuse of toxic substances (Enoch, 2011), humor disorders (Briere & Scott, 2006), self-injury behavior (Yates et al., 2008), conduct disorders and suicide (Gilbert et al., 2009).

Further research focusing on children and teenagers who grow in circumscribed environments for reasons of geopolitical conflict and crisis situations (Smid et al., 2011; Vervliet et al., 2014; Baddoura and Merhi, 2015), revealed that the long term exposition to adverse events related to war and to the lack of emotional affection support can lead them to a traumatic disorder (van der Kolk, 2005). These adverse life contexts seem to affect their emotional regulation, cognition, interpersonal relationships and the building up of an identity and life meaning, and lead to a complex trauma disorder (PTSDC) far beyond PTSD (Cloitre et al., 2013; Dimitry, 2012).

Based on what the literature has shown about a direct association between childhood trauma and PTSD, it is pertinent to point out that in Brazil, according to an unprecedented

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survey on the panorama of lethal and sexual violence against children and adolescents carried out between 2016 and 2020 by *Panorama da Violência Letal e Sexual contra Crianças e Adolescentes no Brasil* (UNICEF and Fórum Brasileiro de Segurança Pública – FBSP), 2021), has revealed that 35.000 children and adolescents aged from 0 to 19 were violently murdered in Brazil — an average of 7.000 per year. Furthermore, from 2017 to 2020, 180.000 individuals have experienced sexual violence — an average of 45,000 per year. And, most cases of sexual violence against girls and boys occur in the victim's home and, in cases where there is information about the perpetrator of the crime, 86% of the aggressors were close to the victim or family members.

Thus, based on the literature evidence highlighted above, and, due to the frightening circumstances that Brazilian children have been facing in relation to sexual violence, it is proposed as the aim of this essay, to reflect on about the cognitive, and more specifically, the executive function, emotional, and attachment dimensions in children who have been exposed to the experience of violence, and that may consequently present PTSD.

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### **Trauma in Development and Executive Function**

Trauma is commonly considered an unbearable and intolerable life experience (Bohleber & Leuzinger-Bohleber, 2016; Levine et al., 2019). Most of the time, victims of sexual abuse, militaries who had been in combat, children victims of violence (França, 2017) and mistreat (Schor, 2017), get so disturbed when evoking these experiences (APA, 2013; DSM-5, 2014), that they use avoidant strategies and try to expel these memories from their minds and move on as if anything had ever happened (Bohleber, 2007; Levine, 2015). Inhabiting two worlds inside themselves (Laub, 2005; Jacobs, 2016) these persons need both to carry out a memory of horror (Levine, 2015) and the shame of vulnerability (Cyrulnik, 2012) and, at the same time to assume a unknowing place in their own experience (Laub & Auerhahn, 1993; Laub, 2005) that allows them to continue with everyday life (Alford, 2018).

In order to recognize the effects of childhood trauma in long term, van der Kolk (2005) proposed the concept of Trauma Disorder during Child Development, emphasizing that the complex trauma condition as life span effects on emotion regulation, cognitions, relationships and the individuals' identity. Young people exposed to trauma have a wide variety of emotional

and physical health conditions (Enoch, 2011; R-L Punamäki et al., 2017). An impaired cognitive behavior, or more specifically, a worse executive functioning, caused by stress in early life and by the exposition to trauma during youth, may also be identified (Kavanaugh et al., 2017; Malarbi et al., 2017; R. Op den Kelder et al., 2018).

Recently, several researchers have proposed a subtype of trauma denominated Complex Post-Traumatic Stress Disorder (CPTSD) (Cloitre et al., 2011; Dar et al., 2015; D'Andrea et al., 2012; Ford and Courtois, 2014; Ford et al., 2013; Knefel & Lueger-Schuster, 2013; Sar, 2011; van Dijke et al., 2011). As these investigations highlight, the CPTSD is more commonly found in individuals, both adults and children, who have a severe and chronic trauma history. However, cumulative trauma during childhood was far beyond the strongest contributory factor for the complexity of the symptoms (Courtois, 2008), the impaired executive function (Najjar et al., 2008), dissociation (Sar et al., 2014), and the emotional and affectional regulation (Davidson & McEwen, 2012; Zlotnick et al., 2008).

4 According to DeBellis et al., (2005), trauma in infancy causes more damage than trauma experienced later in life due to the processes of neurocognitive, phsycoemotional and relational development. Traumatic experiences in infancy create a myriad of cumulative effects in the development of the mind, brain, body and to the child's self, which rebounds in the ability to respond to adaptability to stressful situations along their development (Condly, 2006; Qouta et al., 2012; Dye, 2018; Ghannam & Thabet, 2014).

In addition, for Perry (2006), trauma interrupts the normal development of the brain in several areas, as for example, in the brainstem, responsible for the stress regulation and metabolism; the limbic system, which regulates the emotions and humor; and the cortex that is associated to the cognition, language and reasoning. The most affected brain areas in abused youngsters seems to be the pre-frontal cortex and the amygdala (DeBellis & Thomas, 2003; Craig, 2010; Cowell et al., 2015; Teicher & Samson, 2016), as well as, atypicality in the structural connectivity between the prior cingulate cortex and the pre-frontal cortex was revealed (Hart & Rubia, 2012).

The pre-frontal cortex is considered to be a super structure that regulates and controls cognition, emotion and behavior. Such abilities are called Executive Functions, and are characterized as being the most advanced and complex ones in all brain. They seem linked to intentionality, meaning and complex decision making (Best & Miller, 2010; Goldberg, 2002; Lezak,

2004), as also to the capacity of adjustment, adaptation or flexibility of a behaviour facing different realities that come from the outside environment. It allows them, then to play with mental ideas, to think before acting, to face sudden events and new challenges, to resist temptations and to remain focused in order to reach a goal (Miyake & Friedman, 2012; Diamond, 2013; Goldstein et al., 2014).

According to the results presented in a meta-analysis study which highlighted the relation between exposition to trauma and the cognitive domain of work memory, inhibition and cognitive flexibility during youth, Op den Kelder et al., (2018) suggest that the exposition to trauma can affect the executive functioning, and, consequently, the deficit on the executive functions can provide to the individuals an increased risk of exposition to post traumatic events (Aupperle et al., 2012).

Kavanaugh et al., (2017) and Malarbi et al., (2017), suggest that young people exposed to trauma and who have suffered abuse have a worse performance in executive functions than controls. According to such investigations, the exposition to trauma can influence the executive functions when it impacts the subjacent neurobiological mechanisms, because stress in the beginning of life, as abuse, affects the hypothalamus-pituitary-adrenocortical axial, as well as structures on the corticolimbics network (De Bellis, 2001; Gunnar & Quevedo, 2007).

In this way, being the capacity of interpersonal problem resolution a conscious and rational coping process, (D’Zurilla & Nezu, 2010), the literature (Barkley, 2001; Gioia et al. 2008; Goldstein, 2014) have demonstrated that the executive functions deficit and the disorder of cognitive processes may be due to traumatization during childhood and youth. It can also echo in the prominent way of the avoidance behavior and damage in the condition of mindfulness and coping (Anderson, 2001; Isquith et al., 2005; Miller & Cohen, 2001).

Furthermore, according to the metacognitive model denominated *Cognitive Attention Syndrome* (CAS), there is evidence that suggest an association among executive functioning disorders, the persistence of PTSD and the development of psychological disorders resulting from childhood trauma (Wells, 2000). As Myers & Wells (2013, 2015) have demonstrated, the presentation of behavior such as rumination or worry, attentional focus to external and internal threats, strategies of suppression of thoughts and a behavior of avoidance could be derived from negative metacognitive beliefs (Wells, 2009) which are built up during childhood and youth

(Schneider, 2008). In addition, Myers and Wells (2015) have suggested that CAS is derived from negative metacognitive beliefs, as well as, CAS could be connected to etiology and the maintenance of negative emotions and psychological disorders from the Self-Regulated Executive Function Model.

That said, CAS is characterized by the limitation of cognitive resources, strategies of non-affective controls, and continuous focus in the content of the thought (repetitive thought) (Wells, 2000, 2006). Myers and Wells (2015) explored the hypothesis that the first aversive experiences can be important for the constitution of negative metacognitive beliefs and for the persistence of psychological symptoms. Furthermore, according to the studies highlighted by these investigations, the authors have concluded that (i) early negative experiences can be a factor in the formation of problematic metacognitions, CAS behaviour of avoidance and, still, (ii) these metacognitions can be important to determine the seriousness of the psychological symptoms.

Even more, CAS's components, such as, worry, rumination, emotional regulation strategies and avoidant behavioral strategies play a mediator role between metacognitive beliefs and PTSD symptoms (Bennett & Wells, 2010; Mazloom et al., 2016; Roussis & Wells, 2006). As mentioned before, 6 early traumatic events lead to the formation of negative metacognitive beliefs and to the activation of CAS, which then increases the likelihood of PTSD symptoms to happen, like avoidance behaviour, ruminations and the suppression of thoughts (Seligowski et al., 2015).

The avoidance behavior, in turn, is regarded as an alternative way to avoid the re-experience of internal pain or disturbing events (e.g., thoughts, emotions and/or physical feelings) and that includes a set of strategies which play an extremely important role in the progress of PTSD symptoms in abused people or neglected during their process of development (Shenk et al., 2012). For this reason, childhood trauma is associated to higher levels of avoidance behaviors (Gratz et al., 2007; Shenk et al., 2012) and this correlation predicts an incredible increase of PTSD symptoms (Shenk et al, 2014).

Based in the research cited above, Hosseini Ramaghani et al., (2019), have developed a study aiming to check the correlation between the direct and indirect effects of trauma in childhood, metacognition, time perspectives and avoidance behavior as being predictors of PTSD symptoms. The results of this study revealed consistent findings concerning the initial PTSD metacognitive model of Wells (2009), as well as, with the results of previous research (Myers and Wells, 2015; Scarpa et al., 2009; Shenk et al., 2012, 2014; Westphal et al., 2016).

The analysis about the conditions that enable trauma in childhood together with the correlation found between inefficient metacognition development and PTSD symptoms also evidenced that victims of violence are impeded to benefit from an emotional support or any secure attachment relationship supplied by the child's caregivers. This has severe developmental consequences since a secure attachment is an essential condition to develop positive self-regulated strategies after experiencing a traumatic event. In the absence of a secure attachment relationship, as in cases of abusive or careless support, the child can develop thoughts of worry in order to avoid new abuse and inadequate behaviors (Bennett and Wells, 2010; Myers and Wells, 2015; Wells, 2009).

Kline et al., (2018), highlighted that individuals with PTSD and avoidance behavior can show more guilt, shame and self-critics when compared to controls. They also present high levels of accountability and critical answers to experiences (thoughts, feelings, and undesirable images), that derails the construction of empathic relationships, intersubjective experiences needing in the validation of the other on how their own feelings are not exceptional. That would reverberate into the construction of a relationship of trust, enabling the expression of their *self*-emotions without the burden of self-recrimination.

However, even if it seems plausible to wait for a positive and meaningful correlation between the avoidance behavior and a greater chance of experience of PTSD symptoms this is not always the case. Situations in which PTSD symptoms are not observed in all adults with traumatic experiences during childhood can be related to the condition of a secure attachment relationship that allows a good metacognition quality.

This way, according to Turner et al. (2012), there are protection factors that can help young children to overcome the exposition to trauma without significative damage along their cognitive, emotional, and behavioral development (Bernier et al., 2012, 2015; Davidson et al., 2006; 2012; Heikamp et al., 2013). Therefore, healthy family relationships can protect children from psychological suffering associated to traumatic traumas, to the presence of nourishing parents, sensible and available caretakers, and stable family relations.

## Trauma in the Development and Attachment

The attachment theory is highly informative for the understanding of family relationships in cases of war and other traumatic conditions. The feeling of security is the essential motivator for young children and the quality of adjustment among the emotional, cognitive, and behavioral aspects between parents (caregivers) and sons are essential for survival and mental health (R.-L. Punamäki et al., 2017). In families with secure attachment, the children learn how to trust themselves and to look for settle with their caregivers. They dare to express both positive and negative emotions, as well as develop mental models where they also articulate themselves with the others with a sense of trust (mental representation of self-security), and inside an environment with a sense of predictability (Bowlby, 1982).

Based on Bowlby's (1973, 1980, 1982) attachment theory, a safe attachment can work as a mechanism of protection against physiological pathology, and it supplies the development of well-succeeded emotions (Lowell et al., 2014). Bowlby considered attachment a safe base from where a child explores the world. Along the following next five decades, the research has proved that having a safe haven promotes self-confidence and brings a sense of solidarity and solicitude in relation to other people facing difficulties. From this reciprocal experience, children learn that the other ones have feelings and ideas, similar and different from themselves. In other words, they are tuned with their environment and with the people who surround them, reaching self-conscience, empathy (Fonagy et al., 1993, 2004), control of impulses and a self-motivation that allow them to become useful members of a wider social culture. Unfortunately, these qualities are missing in the children who are victims of abuse and traumas considering their own development.

As Bowlby (1973, 1980, 1982) highlighted in his studies, the first experiences of a child become a model for all his later relationships and the most remote perception of himself (*self*) is made up in the simplest dialogues made with their parents or caretakers. Therefore, for children who are victims of violence, of any kind, the whole world is full of threats. As they are only able to imagine disastrous results for situations relatively mild, any stranger or any image can be seen as a likelihood of a catastrophe. This is the reason why a bitter experience in the past, mainly those caused by caregivers, has a determinant effect over their thoughts, emotions and behaviors concerning themselves and the others, reflecting in the condition of order, coherence, and the meaning of the events (Stolarski & Cyniak-Cieciura, 2016).



Thus, children with a safe attachment learn the difference between situations that they can control, and those which they need to ask for help. They learn that they can play an active role when facing hard times or ask for support if need. On the other hand, children with a history of abuse learn that terror, prayers and crying don't have any effect over their caregivers. There is nothing they can do or say that would stop the physical abuse, not even bring them some attention and help. They are being conditioned not to react when later in life they come to face any challenges, and, also, they developing a feeling of helplessness (van der Kolk, 2020).

Winnicott (1975a, b) highlighted that physical interactions between children and their caregivers build a way in which the baby could integrate their *self* and, then, a sense of reality and an identity for the whole life. The way the mother takes the baby on her arms conditionate the ability for her baby to feel their body as a place where psychic lives. However, the situation can become hard when mothers don't get into the same tune of the physical and affective of the baby's reality. In case the mother doesn't meet the impulses and needs of the infant, he learns how to become the idea the mother has of himself. He must reduce his internal feelings and try to adjust himself to the needs of his caregiver. It makes the child feel there is something wrong. Children who are needy of physical and affective tune can block whatever returns from the body, the thirst of pleasure, purpose and direction.

As van der Kolk (2020) has suggested, in kindergarten, such children who feel unsafe and have deprived to build secure attachment mental representations, show themselves being aggressive and distant, and in the future, they are most prone to develop a range of psychiatric problems. Besides, they show physiological stress that manifests in the variation of cardiac frequencies, hormonal answers of stress and the fall of immunological factor.

Even more, children who don't have an internal feeling of safety will show difficulties to distinguish safety from danger. If the person feels chronically apathetic, situations with a potential of danger can cause them the feeling of being alive. If the person thinks she is not worthy of it (otherwise, why wouldn't the parents treat him well), he starts to expect other people treat him the same way. Consequently, disorganized children with this kind of self-perceptions tend to be traumatized by further experiences (Finkelhor, Ormrod & Turner, 2007; Ford, et al., 2010).

Lyons-Ruth (2003a) dedicated herself to study the dissociation phenomenon (Liotti, 2004, 2006), which takes the person to feel lost, smashed, abandoned and disconnected from the world. He tends to see

himself as being not appreciated, empty, helpless, imprisoned, as he carried a huge burden. The author has found in her investigations a sharp and unpredicted relation between distance and dissonance on mothers during the two first years of the children, and dissociative symptoms in the beginning of the adult life of these children. She concludes that these babies who are not truly seen and noticed by their mothers tend to become incapable teenagers concerning the way they see and notice things.

A baby who benefits from secure relationships learns how to communicate his pains and frustrations as much as his *self* — his interests, preferences, and goals. However, if the caregivers do not pay attention to the baby, or even resent his existence, he learns to expect rejection and distance (Pallini et al., 2014). He faces the situation in the best way he can, blocking the hostility or neglect from the mother, acting as if this was not important. However, his body tends to keep itself in a state of alert, prepared to resist to blows, privations or abandon. Dissociation means, at the same time, knowing and not knowing about oneself (Lyons-Ruth, 2003b), and in the long run this blockage can turn into the ability to not feel real, as if nothing else matters, even if it is the need to protect oneself (Lyons-Ruth et al., 2013).

10 The fundamental and critical problem is that the individuals how suffering childhood violence do not know how to feel safe. The absence of safety in the first relationships with their caregivers take them to a damaged feeling of inner reality and to an excessive idealization of the other people. Due to the structure of multiple and incompatible *Internal Working Models* (Bowlby, 1973), metacognitive deficits are developed within the memory integrative function, conscience, and identity (Farina & Liotti, 2013; Guédénay, 2015; Liotti, 2006).

It doesn't mean that these *Attachment Internal Working Models* cannot be modified by experience. A deeply nourishing relationship mainly in teenagerhood, when the brain is crossing, again, a period of exponential alteration, can in fact change us. Adults who are victims of abuse and neglect in childhood cannot discover the beauty of intimacy a mutual trust, and such connections can widen their universe of perception and representation of themselves (Bernier et al., 2010; 2012). Nevertheless, after learning how to tolerate what happens inside of us, we start to accept, instead of refusing, emotions that keep our models fixed and immutable (van der Kolk, 2020).

Finally, as studies have indicated, secure attachment experiences based on interactions with sensitive caregivers can have a positive and significant impact on Executive Function development (Bernier et al., 2010, 2012, 2015;

Carlson, 2009; Glaser, 2009; Glaser, 2015). On the other hand, when care is inconsistent and negligent, the child is unable to regulate his emotions (ability to tolerate frustration), and this leads to an increase in stress levels and to a dysfunction in the capacity for emotional and cognitive self-regulation (Hane and Fox, 2006; Schore, 2009). That is, early relational trauma caused by disorganized attachment may be associated with dissociative disorder, which consequently interferes with the development of integrative mental functions (Carlson et al., 2009; Nijenhuis et al., 2009, 2011; Punamäki, 2009; Punamäki et al., 2011, 2017).

### Final Note

This being said we can finally reflect on that children's activities are fundamental experiences for the exercise of a creative potency that is worthy for the rest of their life, as a resource against fatal dispositions — reality is very hard to a person who sees himself as incapable of changing it. As Winnicot (1975c) says: “It is through a creative perception, more than anything else, that the individual feels that life is worth living it” (p. 95).

However, when people are dragged to a past, a past filled of violence memories and pain, in a compulsive and constant way, they lack an absence of imagination, a loss of mental flexibility. Without imagination there is no hope, any chance to foresee a better future, any place to go, any goal to achieve. For this reason, it is important to emphasize those families, which provide healthy environments and secure attachment relationships to children enable them to connect with the world around them and with others with a sense of reality, creativity, and building trusting relationships. Finally, it is relevant to think about the possibility of an early intervention and diagnosis of dysfunctional processes related to emotional, cognitive, behavioral and social developments. These are important and required circumstances enable the child and the teenager to move on beyond their traumatic event.

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## Resumos

(Transtorno de estresse pós-traumático complexo (TEPT\_C), função executiva e apego)

*Estudos realizados com crianças e adolescentes sugerem que a exposição prolongada a eventos adversos e à falta de apoio emocional e psicossocial podem levar a quadros traumatizantes complexos (TEPT\_C), proporcionando dificuldades que afetam a regulação emocional, a cognição, as relações interpessoais e a constituição da identidade. O objetivo deste ensaio é refletir sobre as dimensões cognitivas, mais especificamente das funções executivas, os aspectos emocionais e de apego em crianças, que foram expostos à cenários e experiências de violência.*

**Palavras-chave:** TEPT\_C, apego, função executiva, infância

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(Le trouble de stress post-traumatique complexe (SCPD), la fonction exécutive et l'attachement)

*Des études menées auprès d'enfants et d'adolescents révèlent que l'exposition à long terme à des événements indésirables et le manque de soutien émotionnel et psychosocial peuvent conduire à des conditions de traumatisme complexe (TSPT\_C) fournissant des difficultés qui affectent la régulation émotionnelle, la cognition, plus spécifiquement la fonction exécutive, les relations interpersonnelles, les relations et la constitution de l'identité. Ainsi, le but de cet essai est de réfléchir sur les aspects du développement cognitif, émotionnel, et de l'attachement chez les enfants qui sont exposés à l'expérience de la violence.*

**Mots-clés:** TSPT\_C, attachement, fonction exécutive, enfance

(El trastorno de estrés postraumático complejo (TEPT\_C), la función ejecutiva y el apego)

*Los estudios realizados con niños y adolescentes revelan que la exposición prolongada a eventos adversos y la falta de apoyo emocional y psicossocial puede conducir a condiciones de traumatización compleja (TEPT\_C) proporcionando dificultades que afectan la regulación emocional, cognitiva, relaciones interpersonales y constitución de la identidad. El objetivo de este ensayo es*

*reflexionar sobre aspectos del desarrollo cognitivo, más específicamente la función ejecutiva, emocional, y del apego en niños que están expuestos a la experiencia de violencia.*

**Palabras claves:** TEPTC, apego, función ejecutiva, infancia

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