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Longitudinal growth of post-traumatic stress and depressive symptoms following a child maltreatment allegation: An examination of violence exposure, family risk and placement type

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ABSTRACT

Few longitudinal studies have analyzed how traumatic experiences (e.g. home removal, violence exposure) influence both depressive and Post-Traumatic Stress (PTS) symptoms in children involved with Child Protective Services (CPS). This study investigated the change trajectories of both depressive and PTS symptomatology as well as their associations over time, focusing on the effect of complex trauma. Data were obtained from the National Survey of Child and Adolescent Well-Being (1999–2007), a nationally representative study of children and adolescents who were referred to child protective services for alleged maltreatment. The Children's Depression Inventory (CDI) scale measured depressive symptoms and the Post Traumatic Stress Disorder section of a version of the Trauma Symptom Checklist for Children (TSCC) provided the measure of current trauma-related symptoms or distress. Analyses were conducted using a parallel process growth curve model. The participants' initial levels of depressive and PTS symptomatology were significantly and positively related; furthermore, any changes in these two outcomes were also correlated longitudinally. The initial assessment of PTS symptoms significantly contributed to the advancement of more severe depressive symptoms over time. No significant differences were found between youth who remained in the home and those removed from the home. However, violence exposure, sexual abuse, gender and age were significant predictors of level and rate of change in both PTS and depressive symptoms. PTS growth factors mediated the longitudinal relationship between witnessing severe violence and depressive symptoms. The findings suggest a complex developmental association between depressive and PTS symptomatology among CPS-involved youth that is rooted in early childhood experiences with complex trauma.

1. Introduction

The estimated prevalence of mental health disorders among CPS-involved youth ranges from 11%–80% depending on the nature of the sample. These estimates are much higher in comparison to the general youth population (0.5–25%) (Dovran, Winje, Arefjord, & Haugland, 2012; Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995; Pecora, White, Jackson, & Wiggins, 2009; Shin, 2005) The relatively higher prevalence has been attributed to heightened exposure to complex and ongoing traumas among youth involved with child protective services. Indeed, the bulk of evidence suggests that CPS-involved youth have an increased risk of developing a variety of psychological, emotional and behavior problems (Clausen, Landsverk, Ganger, Chadwick, & Litrownik, 1998; Jee et al., 2010; Jonson-Reid, 1998; Minnis, Everett, Pelosi, Dunn, & Knapp, 2006; Ryan, Herz, Hernandez, & Marshall, 2007; S. Horwitz, M. Hurlburt, & J. Zhang, 2010a). Across studies using diverse samples (e.g. foster care youth, young urban adults, individuals exposed to a natural disaster) and research methods, a cross-sectional association, or co-morbidity, between major depressive disorder and post-traumatic stress disorder (PTSD) has been well documented (Lawrence, Carlson, & Egeland, 2006; O'Donnell, Creamer, & Pattison, 2004). In a nationally representative study of adolescents, for example, 29% of adolescents diagnosed with a major depressive disorder (MDD) also met criteria for PTSD and 62% of PTSD cases also met criteria for MDD (Kilpatrick et al., 2003a, 2003b). The wide variation in rates of depressive and PTS symptoms among CPS-involved children may be attributed to different samples and varying methodologies that frame assessments and definitions of mental health problems. Co-morbidity between symptoms of PTS and depression has important implications for the etiology, treatment and prognosis of mental health disorders in vulnerable populations. Despite a large body of research

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establishing a cross-sectional relationship between PTSD and MDD, we know little about how these symptoms co-develop over time, particularly among at-risk populations. Consequently, the present study investigated level and change in PTS and depressive symptoms in a nationally representative sample of children and adolescents (ages 8–15) following a referral to CPS for an investigation of abuse or neglect.

Many scholars have noted that existing diagnoses do not capture the real life experiences of youth exposed to complex trauma, nor do they fully account for the severity of their behavior problems (Cook et al., 2005; Van der Kolk & d Andrea, 2010). Empirical research supports this assertion. Most studies have shown that only a small subset of trauma victims develop PTSD (Copeland, Keeler, Angold, & Costello, 2007) (Denton, Frogley, Jackson, John, & Querstret, 2016). As well, PTSD is not the most common diagnosis among youth exposed to complex trauma (Rayburn, McWey, & Cui, 2016). On this basis, Rayburn et al. (2016), have argued that co-morbid diagnoses "may unintentionally convey that different symptoms are independent from one another rather than interrelated (p. 332) (Rayburn et al., 2016)." Developmental Trauma Disorder (DTD) has been proposed as a diagnosis that takes into consideration symptom progression and co-development as causal mechanisms undergirding a single traumatic stress diagnosis for youth experiencing complex trauma. The evidentiary basis for DTD is that preexisting major depression renders individuals more vulnerable to PTSD in the aftermath of trauma (Breslau, Davis, Peterson, & Schultz, 1997; Bromet, Sonnega, & Kessler, 1998) and, conversely, the presence of PTSD increases the risk for first onset of major depression (Breslau et al., 1997; Kessler et al., 1995). The DTD perspective has support from research showing longitudinal interrelationships between growth in PTS and internalizing symptoms over time. O'Donnell et al. (2004), for example, found that while PTSD often occurs independently of depression in the short term, PTSD and depression co-occur *and* co-develop over the long term (O'Donnell et al., 2004). A more recent study conducted by Rayburn et al. (2016) found that the longitudinal trajectories of PTS and internalizing symptoms generally demonstrate significant sub-symptom covariation (Rayburn et al., 2016). Developmental Trauma theory posits that the co-occurrence of PTSD and MDD implies a shared vulnerability indicative of a general traumatic stress concept.

Research demonstrating the presence of similar risk factors that set in motion both depression and PTSD further supports the DTD model. For example, research has shown that among youth involved with Child Protective Services (CPS), risk factors for co-morbid PTSD and depression include a history of depression, violence exposure, lower levels of social support and gender (Campbell et al., 2007). In this context, DTD theory suggests that youth involved with child protective services are more likely than other groups to exhibit heightened PTS and depressive symptoms because they are more likely to experience a range of adversities throughout their lives. Empirical work has linked complex trauma (i.e. violence exposure and child maltreatment) to an increase in both PTS and depressive symptoms; furthermore, previous studies have demonstrated the cumulative nature of complex trauma that exacerbate PTS symptoms and, in turn, intensify depressed mood. Thus, children exposed to maltreatment, violence and/or loss of caregivers are particularly vulnerable to co-morbid diagnoses. In a nationally representative study of adolescent trauma and mental health, Kilpatrick et al. (2003a, 2003b) found that the odds of co-morbid PTSD and MDD were almost three times higher among adolescents with a history of witnessing violence, and more than twice as high among youth who were sexually or physically victimized compared to adolescents without such a history (Kilpatrick et al., 2003a, 2003b).

Several studies have documented high rates of emotional and behavioral problems among children removed from their homes (Burns et al., 2004a, 2004b; Clausen et al., 1998; Pilowsky, 1995) or who remain with their families with active child welfare cases (Berrick, Barth, & Needell, 1994; Clausen et al., 1998; Farmer et al., 2001). Although the bulk of the public policy and research attention has been focused on children in OHC, the majority of children with substantiated or highly likely maltreatment in fact remain IHC (S. M. Horwitz, M. S. Hurlburt, & J. Zhang, 2010b). Few examinations, however, have focused on differences between children placed in alternative care settings and who remain in the home. Studies that do exist have yielded inconsistent findings. Some studies have shown that OHC is associated with better psychological and physical outcomes (Davidson-Arad, Englechin-Segal, & Wozner, 2003); others have shown that youth in OHC have worse psychological outcomes (i.e. higher levels of depression and PTSD); and others still have found no relationship between compromised mental health and type of care after controlling for differentials in family risk and violence exposure (Kolko et al., 2010). The conflicting nature of previous research suggests additional examinations of heightened PTS and depressive symptoms by placement type are warranted (Kolko et al., 2010; Shlonsky, Haskins, Wulczyn, & Webb, 2007).

A central limitation of the existing research centers around the failure to control for the potentially confounding effects of comorbidity (Saigh, Yasik, Oberfield, Halamandaris, & McHugh, 2002) and/or viewing co-morbidity as a cross-sectional phenomenon. Therefore, despite the increasing awareness of the cumulative effects of trauma among at-risk populations, the longitudinal mechanisms underlying the association between violence exposure and depressive symptoms remains unclear. Regarding PTS, a study of children aged 2–14 involved with the child welfare system found trauma symptoms decreased over a 3-year period following a child welfare system investigation (McCrae, 2008). Specific to internalizing problems, findings from a study of adolescents aged 13–16 in out-of-home care found that internalizing symptoms demonstrated a downward trend; however specific covariates influenced the trajectories (McWey, Cui, & Pazdera, 2010). The authors know of only one study to date that has focused on longitudinal interrelationships between symptom growth among CPS-involved youth (Rayburn et al., 2016). This study, however, explored the interrelationships between PTS and a broader class of broadband symptoms that includes not only depressive symptoms but other types of internalizing responses as well. One limitation of this study was that it neither explored differences across placement types nor did it distinguish between witnessing violence and being a victim of violence. Regarding the impact of violence exposure, several studies using different samples and different measures of violence (e.g. home, community, witnessing or victimization) have found that PTS symptoms mediate the relationship between violence exposure and internalizing behavior problems in children (Ruchkin, Henrich, Jones, Vermeiren, & Schwab-Stone, 2007; Yoon, Steigerwald, Holmes, & Perzynski, 2016). Given the positive association between PTS and depressive symptoms and the higher likelihood of developing PTSD following violence exposure, exploring PTS symptoms as potential underlying mechanisms linking violence exposure to both *level* and *growth* of depressive symptoms represents a significant omission in the current literature. This is particularly important given previous research showing that major depressive disorder is relatively uncommon among prepubertal children but increases in frequency in adolescence (Finch, Saylor, & Edwards, 1985).

Due to knowledge gaps in previous studies, the present study aims to explore the longitudinal association between an increase in PTS symptomatology and an increase in depressive symptomatology among CPS-involved youth, as well as studying the influence of maltreatment type, placement type, and violence exposure on the outcome trajectories of both mental health measures. Based on prior studies, we first hypothesize that a poorer initial level of PTS symptoms contributes to the advancement of more severe depressive symptoms over time. We further hypothesize that the progression of PTS symptomatology and heightened depressive symptoms is affected by the youth's level of exposure, both as victims and witnesses, to severe violence at home. In this regard, although children in foster care have been found to be at high risk for future developmental, behavioral and emotional problems, OHC children may fare better clinically than IHC children who are