



## Research article

## Children neglected: Where cumulative risk theory fails



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## ABSTRACT

Neglected children, by far the majority of children maltreated, experience an environment most deficient in cognitive stimulation and language exchange. When physical abuse co-occurs with neglect, there is more stimulation through negative parent–child interaction, which may lead to better cognitive outcomes, contrary to Cumulative Risk Theory. The purpose of the current study was to assess whether children only neglected perform worse on cognitive tasks than children neglected and physically abused. Utilizing LONGSCAN archived data, 271 children only neglected and 101 children neglected and physically abused in the first four years of life were compared. The two groups were assessed at age 6 on the WPPSI-R vocabulary and block design subtests, correlates of cognitive intelligence. Regression analyses were performed, controlling for additional predictors of poor cognitive outcome, including socioeconomic variables and caregiver depression. Children only neglected scored significantly worse than children neglected and abused on the WPPSI-R vocabulary subtest ( $p = 0.03$ ). The groups did not differ on the block design subtest ( $p = 0.4$ ). This study shows that for neglected children, additional abuse may not additively accumulate risk when considering intelligence outcomes. Children experiencing only neglect may need to be referred for services that address cognitive development, with emphasis on the linguistic environment, in order to best support the developmental challenges of neglected children

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## Introduction

Neglected children are at greatest risk of academic problems and cognitive delays among all maltreated children (Chapple & Vaske, 2010; Eckenrode, Laird, & Doris, 1993; Fantuzzo, Perlman, & Dobbins, 2011; Hildyard & Wolfe, 2002; Trickett & McBride-Chang, 1995). The 2012 National Child Abuse and Neglect Data System (NCANDS) shows that 78% of all reports for suspected maltreatment are for neglect allegations, defined as an omission of care due to failure to provide basic needs or lack of adequate supervision. Despite the high prevalence, neglect continues to be less studied than abuse, that is, physical acts of harm inflicted on a child. Although neglected children are at risk of multiple poor outcomes including cognitive and academic problems, behavioral withdrawal or aggression, poor social interactions, and language delay (Dubowitz, Papas, Black, & Starr, 2002; Hildyard & Wolfe, 2002; Naughton et al., 2013), they are less likely to receive supportive services than children who are abused (Garland et al., 1996; Garland, Landsverk, Hough, & Ellis-MacLeod, 1996; Staudt, 2003).

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The child maltreatment literature is limited by many studies pooling all maltreated children into one sample and comparing to non-maltreated controls (Currie & Spatz Widom, 2010; Shonk & Cicchetti, 2001). Evidence is emerging that a child's particular maltreatment profile informs outcomes more than one type of maltreatment alone (Berzenski & Yates, 2011; English et al., 2005; Pears, Kim, & Fisher, 2008). Neglect, physical abuse, and sexual abuse impose different traumatic experiences, with different effects on the developing brain and resultant differences in cognitive and behavioral development (Egeland, Sroufe, & Erickson, 1983; Pears et al., 2008; Trickett and McBride-Chang, 1995). Thus, much evidence is accumulating that highlights the importance of assessing the child's specific maltreatment trajectory. Yet the question remains how co-occurring abuse and neglect impact developmental outcomes relative to single-type maltreatment exposures.

#### *Cumulative risk of multiple maltreatment and adverse events*

Multiple maltreatment, the co-occurrence of more than one type of abuse and neglect, occurs frequently yet is under-recognized in the literature. According to 2012 national data on the incidence of child maltreatment, multiple maltreatment is common, reported in 14% of out-of-home-serviced children and 18% of foster children (NCANDS, 2013). National data based on reporting likely under-estimates the true incidence of multiple maltreatment, and the increased risk of additional adverse experiences. In accordance with Cumulative Risk Theory, where the number or amount of exposures a child has to risk factors over time determines outcomes in a dose-dependent manner, multiple maltreatment will lead to worse outcomes than single isolated abuse or neglect. The Adverse Childhood Experiences (ACE) Study supports worsening outcomes with cumulative risk. Their analysis of 9,508 adults who completed a survey about their exposure to childhood abuse and household dysfunction showed a strong graded relationship between multiple categories of exposures and adult risk behaviors and disease (Felliti et al., 1998). Adjusted odds ratios increased incrementally from 1.1 to 12.2 for adult health problems as the number of categories of adverse exposures increased from 1 to 4 (Felliti et al., 1998).

The American Academy of Pediatrics Technical Report "The Lifelong Effects of Early Childhood Adversity and Toxic Stress" further supports the additive biological embedding of trauma and stress, viewed from an ecological biodevelopmental (EBD) framework. According to an EBD framework, accumulation of early childhood adversity leads to physiological adaptations and disruptions that can impair learning, behavior, and physical and mental health throughout the lifespan (Shonkoff & Garner, 2012).

Cumulative Risk Theory is further supported by empiric evidence showing additive risk of poor growth and child maltreatment. In one study, 177 children recruited from an inner-city predominantly African American clinic between the ages 3–30 months experiencing neglect, failure to thrive (FTT), or both, were assessed at age 6 years on the Bayley Scales of Infant Development. Those both neglected and failing to thrive had worse cognitive development than those with either neglect only or FTT alone, supporting worse developmental outcome with additional adversity (Mackner, Starr, & Black, 1997). Utilizing the same longitudinal investigation of child maltreatment and child development, Kerr, Black, and Krishnakumar (2000) showed that, for 193 children reported for maltreatment or diagnosed with failure to thrive prior to age 25 months, school behavior was significantly worse in those who had experienced both risks compared to only one.

Trickett et al. (2011) Trickett, Kim, and Prindle (2011) used cluster analysis to classify distinct multiple maltreatment profiles for 303 children ages 9–12 years who had substantiated reports to CPS. Their results showed that those with three or more maltreatment exposures (emotional abuse + physical abuse + neglect, or emotional abuse + physical abuse + neglect + sexual abuse) fared the worst on mental health measures, self-perception scales, and cognitive development compared to those experiencing only two types of maltreatment (neglect + physical abuse, or emotional abuse + physical abuse) or comparison youth recruited from schools in the same zip codes. Thus, with several maltreatment exposures, there is some evidence that Cumulative Risk Theory applies, with more risk exposure leading to worse outcomes.

#### *Interactive model of risk with multiple maltreatment*

Though many studies support a cumulative risk model when viewing developmental and behavioral outcomes of early childhood neglect and abuse, other evidence points to an interactive model of risk, whereby certain risk factors are multiplicative or predominant relative to specific developmental or behavioral outcomes. One study that assessed academic achievement and disciplinary actions for 420 maltreated children kindergarten through grade 12 matched with similar controls, found that children with neglect only or neglect plus physical or sexual abuse experienced the lowest academic achievement among all maltreated children, implying that neglect may have a more substantial influence on academic outcomes even when co-occurring with abuse (Eckenrode et al., 1993).

Another study by Berzenski and Yates (2011) surveyed 2,637 college students on specific profiles of childhood multiple maltreatment. Latent class analysis was utilized to categorize multiple maltreatment profiles, and compare adult outcomes in several domains, including mental health, emotional regulation, risky sexual behaviors, and substance use. They found that participants who experienced emotional abuse alone or any pattern of multiple maltreatments that included emotional abuse reported significantly higher rates of depression and anxiety. The combination of physical abuse with emotional abuse was strongly associated with conduct problems. Here, distinct abuse types and patterns, rather than additive risk,

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