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Abstract: Effects of Foster Children's Epigenetics in Abusive Environments

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This presentation will review the literature on the epigenetics of abused foster children, and the subsequent acute, delayed, and long-term physiological, cognitive, and behavioral effects. One study experimentally investigated the effects of sexual and physical abuse on 150 foster children from 8 to 19 years of age and found post-traumatic stress disorder (PTSD) was diagnosed in 64% of children who experienced sexual abuse and 42% of children who experienced physical abuse. Further, of the foster children who had not experienced either form of abuse, 18% were still diagnosed with PTSD (Dubner & Motta, 1999). In consideration of this, other findings were imperative to investigate literature concerning how chronic exposure to adverse environments, such as a history of trauma abuse, may alter gene expression over time to better understand the epigenetic changes associated with negative physiological, cognitive, and behavioral outcomes. One such gene implicated in stress response and regulation is known as the FKBP5 gene, which is responsible for altering glucocorticoid receptor responsiveness to stress signaling (Tyrka et al., 2015). A latter study indicated child maltreatment exposure may lead to the demethylation of FKBP5 in individuals with a high-risk variant of the gene, resulting in structural and functional brain alterations (Tozzi et al., 2018). As demethylation of the FKBP5 gene decreases the body's ability to regulate stress, it is related to a variety of negative consequences, including an increased chance of developing mood disorders (Tozzi et al., 2018). Therefore, childhood maltreatment substantially raises the probability of behavior problems and mental delays due to environmental stressors (Dubner & Motta, 1999; Tyrka et al., 2015), and FKBP5 demethylation is related to those changes (Tozzi et al., 2018), the current review gathered research concerning the physiological, cognitive, and behavioral effects associated with altered FKBP5 expression, and other epigenetic outcomes, in abused foster children, in order to inform future prevention and intervention practices from a biological perspective.

Keywords: foster children, abuse, epigenetics, FKBP5, methylation