The Biological and Behavioural Effects of Maternal Trauma and Posttraumatic Stress Disorder on Child Development

Thesis submitted for the degree of Doctor of Philosophy

by

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Abstract

Environmental factors such as stress and hormones acting during embryogenesis, as well as early life experiences such as parental care have been clearly demonstrated in animal models to shape the individual’s phenotypic gene expression, brain development, and behavioural repertoires (Meaney, 2005). However, human studies have not assessed both prenatal mental health and the quality of postnatal parental care with the same sample of mothers. The current study sought to fill this gap by investigating the impact of women’s experiences of trauma and posttraumatic stress disorder (PTSD) before pregnancy on the mother’s ante- and postnatal mental health problems, parenting, and children developmental outcomes. The study reported here is the second phase of a longitudinal study that commenced in 2002. In phase one community based middle class women in their third trimester of pregnancy were recruited and followed during the early postnatal period (Linke, 2002; Lowe 2003). The current study assessed forty four mother-infant dyads at three time points during the second postnatal year. The dyads were divided into one of three groups (control, trauma control and PTSD) depending on the mother’s trauma experience and whether she met the lifetime diagnosis for PTSD. The assessments included the measure of the mother and infant’s basal cortisol, the mother’s lifetime and ongoing mental health problems, the quality of the mother-infant relationship, and the development of the infant’s general cognitive abilities, emerging language skills and emotional and behavioural self regulation.

The current study found infant morning cortisol levels measured at 13 months of age were significantly predicted by maternal trauma experience and the subsequent PTSD symptoms of hyperarousal supporting the research of Yehuda and colleagues (2005) and implicating
an epigenetic transmission of environmental experience from the mother to her offspring possibly via *in utero* programming of the HPA axis. Overall, maternal trauma was found to impact on both child language and self regulation development. Unexpectedly, the trauma control or resilient mothers were found to be least engaged with their infants, and their infants had the lowest language development. However, poorer language development was not mediated through dyadic emotional availability or maternal sensitivity. Maternal PTSD was found to be related to poorer child emotional and behavioural outcomes which were mediated through maternal mental health problems. Overall, the findings of the current study suggest that maternal trauma experience is associated with a biologically based mechanism occurring in both the mother and the infant which is protective for both the mother and the child’s emotional health, but comes at a cost of slower infant language development. Furthermore, this mechanism appears to have broken down in the presence of maternal PTSD for both the mother and the infant with subsequent associations with greater maternal mental health problems, more problematic infant emotional and behavioural problems, and disorganised attachment. These findings have clinical implications, particularly for early intervention programs. The results need to be interpreted with caution due to the small sample size. However, the findings have broad implications in relation to resilience to trauma and the development of psychopathology and warrant repetition.
Declaration

This work contains no material which has been accepted for the award of any other degree or diploma in any university or other tertiary institution and, to the best of my knowledge and belief, contains no material previously published or written by another person except where due reference has been made in the text.

I give consent to this copy of my thesis, when deposited in the University Library, being available for photocopying and loan.

Jacqueline Anne Beall

I believe that this thesis is properly presented, conforms to the specification for the degree of sufficient standard to be, prima facie, worthy of examination.

Professor Alexander Cowell McFarlane

Principal Supervisor
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