INTRODUCTION

Themed Issue on Developmental Origins of Adult Mental Health and Illness

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Introductory remarks

Developmental Origins of Health and Disease (DOHaD) is a provocative hypothesis that suggests both that developmental programming of the fetus and young child’s physiological systems occur in the intrauterine environment and that early postnatal life can have long-lasting effects. Much of the evidence for this hypothesis has been derived from population-based epidemiological and non-human animal studies and has been largely focused, although not exclusively, on cardiometabolic health and illness in adulthood. The purpose of this Themed Issue is to extend the literature with a focus on the emerging study of developmental origins of adult mental health and illness. This Themed Issue contains six papers: two reviews and four empirical reports.

The literature suggests that at least two models have been used as proxies of a suboptimal intrauterine environment to examine prenatal programming hypotheses of psychopathology in humans. One model is low birth weight and intrauterine growth restriction. Due to advances in fetal and neonatal medicine in the 1970s, the survival rates of babies born extremely premature have increased, whereas neurosensory impairments among survivors have decreased. Accordingly, the first generation of babies born extremely premature in the early modern era of neonatal intensive care have reached adulthood. These adult survivors of prematurity, now in their third and fourth decades of life, provide ‘natural experiments’ and new and unique opportunities to investigate how pre and early postnatal adversity shape brain–behavior relations over the lifespan. Prematurity reflects a highly compromised intrauterine environment and is associated with increased stress vulnerability and negative outcomes across a variety of adaptive functioning domains during postnatal development and into adulthood. The first three papers in this Themed Issue are aligned with this approach. In the first paper, Van Lieshout and Krzeczkowski provide a timely review of the DOHaD hypothesis and argue that it can be empirically tested using experimental methods in humans, highlighting the implications of the hypothesis for designing perinatal intervention programs aimed at ameliorating or preventing mental disorders across the lifespan. In the next two papers, Dobson et al. and Lund et al. provide empirical evidence on the impact of adverse prenatal and postnatal exposures on diverse mental health outcomes among adult survivors of extremely low birth weight in the oldest known prospectively followed cohort in the world.

A second model is the influence of prenatal exposure to maternal stress, toxins, socio-economic disadvantage and non-heritable genetic mutations on fetal development, and how these insults impact individual differences in developmental plasticity postnatally. Individuals in longitudinal cohorts of relevant studies are now transitioning to adulthood and the long-term effects of maternal stress during pregnancy and post partum and parental stress can be examined in adult offspring. These issues related to maternal adversity during pregnancy in relation to stress vulnerability in offspring are reviewed by Taouk and Schulkin. In the remaining two papers in this Themed Issue are empirical reports on the predictors of the development of socio-emotional problems and psychosis later in life, with Brooker et al. reporting on the impact of early environmental influences such as parenting and inherited anxiety risk, and Kelley et al. reporting on the impact of non-heritable genetic mutations.

The work contained in this Themed Issue provides support for the DOHaD hypothesis as it pertains to mental disorders in adults. As brain plasticity decreases with age, understanding how these and other perinatal exposures affect risk holds immense promise for reducing the impact of mental illness. Future research will further elucidate the mechanisms of these links and their clinical potential, and could provide targets for preventive and therapeutic intervention.