



INTERNATIONAL WORKSHOP Gene × Environment Interaction in Social Relationships

The Neural Mechanisms and Genetic Correlates of Social Interaction

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Abstract

We present convergent results from different experiments, employing different methodologies (fMRI, NIRS, TMS) in humans as well as findings from animal studies that shown how genetic, hormonal, and environmental factors in combination with cultural contexts regulate early parent-infant interactional experiences. Our studies show how early caregiver-infant interactions give rise to caregiver-infant attachment, which influences physiological and psychological processes by modulating brain sensitivity. Furthermore, the attachment between caregiver and infant influences infants' cognitive and socio-emotional development, and subsequently the development of social, familial, and romantic relationships later in life. Successful attachment with a caregiver provides infants with optimal relational experiences that may also improve infants' interactions with their external social environment later in development. Caregiver-infant attachment shapes neural pathways involved in socio-emotional regulation. These patterns of socio-emotional regulation are thought to remain relatively stable over an individual's lifetime, suggesting important links between early caregiver-infant attachment and health related physiological processes (e.g., stress) and vulnerability to risk-factors (e.g., the body's capacity for managing stress-related metabolic demands). Attachment formation is influenced by multiple systems, including environmental factors, such as prenatal chemical signals from the mother to the fetal brain, as well as parenting and genetic factors, such as vulnerability to risk-factors and temperament. Current approaches to the study of caregiver-infant attachment should consider its multi-level nature.

