

Following my heart: Interoceptive sensitivity in infant cognitive development

ABSTRACT:

Interoception, the sensitivity to visceral sensations, is thought to be the fundamental basis for subjective feeling states, shaping our experiences of the world around us. Despite much speculation regarding the developmental origins of interoception, research in developmental samples has been restricted to older childhood due to significant methodological limitations. Therefore, the developmental trajectory of interoception, and the role it plays in emerging social, emotional and cognitive skills, remains unknown. Here, we present the first ever study of interoception in pre-verbal infants. We develop a novel behavioural measure of interoceptive sensitivity, and demonstrate that 5-month old infants do indeed have an implicit awareness of visceral sensations that can guide preferences in the environment. We also report the presence of a neural marker of interoceptive processing, the heartbeat evoked potential, which correlates with our behavioural measure and also shows state fluctuations according to emotional processing demands as it does in adults. This demonstrates that even at this early age, infants' experiences of emotions appear to be closely influenced by their visceral reactions. Finally, we show that the extent to which infants' HEPs are differentially amplified by negative emotions is associated with the negative emotional aspect of their temperament. Infants with a more negative temperament may be more influenced by their physiological responses during observation of negative emotions. These results have important implications for the development of social cognition and self-regulation, and consequently may play a determining role in infants' later attachment, personality traits and cognitive abilities.

Keywords

Interoception, Development, Social cognition, Self-regulation, Temperament

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