
Ongoing neural development of affective theory of mind throughout adolescence

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Abstract

Affective Theory of Mind, an important aspect of Theory of Mind (ToM), involves understanding of complex emotions (Shamay-Tsoory et al., 2010). In adolescence, which is a developmental phase with major socio-emotional challenges, affective ToM is a critical ability. This is corroborated by first studies suggesting an ongoing development of affective ToM across adolescence on the behavioural level (Vetter et al., under review). Using a developmentally sensitive behavioural task in combination with fMRI we investigated the neural development of affective Theory of Mind throughout adolescence. The relationship between performance on the affective ToM task and neural activation was further explored. We scanned 18 adolescent (aged 12–14 years) and 18 young adult women (aged 19–25 years) while they evaluated complex affective mental states depicted by actors in video clips. The ventral medial prefrontal cortex showed a significantly stronger response in adolescents in comparison to adults on the affective ToM but not on a physical control condition. In contrast, adults activated a part of the fusiform gyrus and the dorsolateral prefrontal cortex more strongly than adolescents. Task performance over both age groups was correlated with amygdala activity. Ongoing behavioural development of affective ToM throughout adolescence until young adulthood is thus paralleled by neural changes in the ventral medial prefrontal cortex. Furthermore, the results stress the importance to employ developmentally sensitive tasks and simultaneously control for performance. Overall, the ongoing refinement of affective ToM might help to master socio-emotional challenges in adolescence.

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