

Publication

Altered Value Coding in the Ventromedial Prefrontal Cortex in Healthy Older Adults

JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)**ID** 3672399**Author(s)** Yu, Jing; Mamerow, Loreen; Lei, Xu; Fang, Lei; Mata, Rui**Author(s) at UniBasel** [Mata, Rui](#) ; [Tisdall, Loreen](#) ;**Year** 2016**Title** Altered Value Coding in the Ventromedial Prefrontal Cortex in Healthy Older Adults**Journal** Frontiers in Aging Neuroscience**Volume** 8**Pages / Article-Number** 210**Keywords** Balloon Analogue Risk Task; aging; anterior insula; decision making; ventromedial prefrontal cortex

Previous work suggests that aging is associated with changes in risk taking but less is known about their underlying neural basis, such as the potential age differences in the neural processing of value and risk. The goal of the present study was to investigate adult age differences in functional neural responses in a naturalistic risk-taking task. Twenty-six young adults and 27 healthy older adults completed the Balloon Analogue Risk Task while undergoing functional magnetic resonance imaging. Young and older adults showed similar overt risk-taking behavior. Group comparison of neural activity in response to risky vs. control stimuli revealed similar patterns of activation in the bilateral striatum, anterior insula (AI) and ventromedial prefrontal cortex (vmPFC). Group comparison of parametrically modulated activity in response to continued pumping similarly revealed comparable results for both age groups in the AI and, potentially, the striatum, yet differences emerged for regional activity in the vmPFC. At whole brain level, insular, striatal and vmPFC activation was predictive of behavioral risk taking for young but not older adults. The current results are interpreted and discussed as preserved neural tracking of risk and reward in the AI and striatum, respectively, but altered value coding in the vmPFC in the two age groups. The latter finding points toward older adults exhibiting differential vmPFC-related integration and value coding. Furthermore, neural activation holds differential predictive validity for behavioral risk taking in young and older adults.

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