

Healthy aging and economic decision-making: Neuropsychophysiological examination of the affect-integration-motivation framework of decision-making in aging

ABSTRACT:

Background

The Affect–Integration–Motivation (AIM) framework was proposed to clarify how brain circuits that support decision-making are altered by aging. According to this framework, choices are preceded by affective, integrative, and motivational processes, which may all be affected by aging.

Aims

The present project aimed to explore the temporal resolution of the EEG to find the neural correlates of age differences in such mechanisms, including gain/loss anticipation, value integration, motivational processes underlying motor choice, as well as processing of positive/negative rewards. Moreover, through facial/emotional tasks, we investigated the effects of aging on affective processing.

Method

Electrophysiological data were recorded from 77 participants (20-80 years old) during the performance of the Monetary Incentive Delay Task. We analyzed the Cue-P3, Contingent Negative Variation, Target-P3, Feedback-related Negativity, and the Feedback-P3. During the facial/emotional tasks, we analyzed the P100, N70, and P250.

Results

The results support the AIM framework, suggesting that aging altered affective processes, while preserved integration and motivation processes. In the facial/emotional processing, older adults had increased N170 amplitude for both facial and non-facial stimuli, and older faces elicited larger N170 amplitudes independently of the participants' age.

Conclusions

Our study shows that future research may profit from decomposing decision and emotional processes to understand how biological aging affects decision making and affective mechanisms. These results have important social implications and suggest that aging may hamper the neural processing of negative choices and results, as well as the facial expressions of emotion, especially for own-age peers.

Keywords

Aging, Decision-making, EEG, ERP

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Published Work:

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