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# The temporal dynamics of the processing of social rejection feedback: Insights from the FRN-P3 complex

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## Abstract

Social rejection is a painful experience that shares neural networks with the experience of physical pain. Evolutionarily, these feelings of ‘hurt’ are thought to serve an adaptive behavioral function, namely promoting social connectedness. Previous neuroimaging studies associated the processing of social rejection feedback to increased activity in the anterior cingulate cortex (ACC). To date, however, the exact role of the ACC in social information processing remains elusive, as the use of various paradigms has resulted in the recruitment of different subdivisions of the ACC. In this study we recorded the FRN – an electro-cortical marker of ACC activity – and the feedback-related P3 to unravel the electro-cortical dynamics of social and non-social expectancy confirmation and violation. In line with previous findings observed using cognitive paradigms, the FRN was most sensitive to feedback that violated prior expectations. This was regardless of whether feedback communicated positive or negative valence. Furthermore, we found no evidence for preferential processing of social over non-social information. Interestingly, the feedback-related P3 seemed more sensitive to social context, as we found larger P3 amplitudes during the processing of social as opposed to non-social feedback. Together, the current findings suggest that the FRN reflects a rapid conflict monitoring system that is particularly sensitive to expectancy violation (i.e., congruent vs. incongruent), whereas the feedback-related P3 seems more sensitive to the contextual characteristics of feedback (i.e., social vs. non-social).

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