

The neural mechanisms underlying decision making during impression formation

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Making sense of others is a challenging endeavor for social observers. This process requires integration of complex and occasionally conflicting information into impressions of the social beings around us. As compared to non-social cognitive processing, social encoding recruits a distinct set of neural mechanisms, primarily localized in the dorsomedial prefrontal cortex (dmPFC; Mitchell et al., 2002). In the present study we further characterized the neural processes accompanying inferences about others. We hypothesized that neural activity engaged in the processing of conflicting information will reflect which information is subjectively relevant and which is ignored while forming social-related decisions.

To test this hypothesis, we measured BOLD signals during exposure to different person profiles. Each profile consisted of varying degrees of positive and negative information. In each profile presentation, there was a gradual transition from positive to negative information or vice versa. Subjects were requested to form an impression of each person using a valence scale. These responses were used to determine which information was subjectively significant, influencing their impressions (decision-related), and which was ignored (non-decision related). We then looked for brain areas responding differentially to these different types of information.

We found that the dmPFC was engaged during the presentation of social information but did not respond differentially to decision-related versus non-decision related information. Interestingly, areas that did show such pattern of responding, with higher responses to decision-related information, were areas implicated in emotional and value encoding, namely, the amygdala, the striatum, and the ventromedial PFC. These results suggest that impression formation recruits not only brain systems specialized for social encoding but also emotional and value processing systems. This integrated activity may be important for decision making in a social context.