

# Nothing to lose? Separating the Neural Correlates of Decision, Anticipation and Feedback in the Balloon Analogue Risk Task

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## Abstract

Understanding the subprocesses of risky decision-making is prerequisite for understanding (dys-)functional decisions. For the present fMRI study we designed a variant of the balloon-analogue-risk task (BART) that allows separating decision making from reward anticipation and feedback processing. 29 healthy young adults completed the BART. We analyzed neural activity and functional connectivity. Parametric modulation allowed assessing changes in brain functioning depending on the riskiness of the decision. Our results confirm involvement of Nacc, Insula, ACC and DLPFC in all subprocesses of risky decision making. In addition, subprocesses were differentiated by the strength of activation in these regions, as well as by changes in activity and Nacc-connectivity by the riskiness of the decision. The presented fMRI-BART variant allows distinguishing activity and connectivity during the subprocesses of risky decision making and shows how activation and connectivity patterns relate to the riskiness of the decision. Hence, it is a useful tool for unraveling impairments in subprocesses of risky decision making in people with high risk behavior.

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