Motivation counteracts aversive processing in the amygdala and visual cortex
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Introduction
• Rewards reduce interference effects of task-irrelevant aversive stimuli (Padmala & Pessoa, 2014)
• Purpose of this study:
(1) Understand the neural basis of this effect in the amygdala and visual cortex
(2) Examine how individual differences in anxiety and reward sensitivity relate to this effect
(3) Examine whether punishments reduce interference effects of task-irrelevant aversive stimuli in the amygdala and visual cortex

Main Task Structure

Study Methods & Analysis
• 38 participants (15 male, age range: 18 – 34 years)
• Task: 6 conditioning runs interleaved with 6 main runs
• Scanner, Parameters, & Software:
  • Siemens 3.0T Trio, 32 Channel
  • TR = 2.5 s, TE = 25 ms, FOV = 192 mm, 3 mm isotropic
  • All fMRI data preprocessed using AFNI & SPM
• ROI Analysis of Amygdala and Fusiform gyrus
  • Created Amygdala ROI (Desikan et al., 2006) & Fusiform gyrus ROI (Sabatinelli et al., 2011)
  • Multiple regression analysis with canonical hemodynamic response function
  • 6 main regressors (no reward/no punishment, reward, punishment x neutral, fear)

Behavioral Results

Amygdala ROI Results

Individual Differences

Moderation Analysis

Conclusions
• Rewards reduce the negative distractor processing in the amygdala
• Individual differences in anxiety and reward sensitivity are related to reward x emotion interaction in the amygdala
• Punishments did not reduce the negative distractor processing in the amygdala

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References

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