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Interoceptive Attentiveness fMRI Task Protocol

While participants are inside the fMRI scanner, they are looking at a screen and holding a 4-button keypad to provide their answers.

On the screen appear the task instructions; a 10-second ‘Interoception’ condition alternates with a 10-second ‘Exteroception’ condition, for a total duration of 10 minutes.

In the ‘Interoception’ condition, subjects are instructed, “Focus on the sensations of your heartbeat” (10 seconds) and next asked to rate the intensity of their sensations on a 4-point Likert scale (from 1: ‘no sensation’ to 4: ‘extremely strong sensation’) (5 seconds).

In the ‘Exteroception’ condition, participants are asked to “count how many times the word on the screen changes from ‘TARGET’ to ‘target’ ” (10 seconds) and then asked to report this number (5 seconds). This task is a variation of the standard Continuous Performance Test, a widely-used task which engages visual attention and does not include potentially confounding working memory or emotional components.

This implementation of the heart-focused Interoceptive Attentiveness fMRI Task was adapted from (Avery et al., 2014) and (Farb, Segal, & Anderson, 2013). In a meta-analysis, this task was found to reliably activate an extended brain network including the posterior right and left insula (a known major gateway for relaying interoceptive information), right claustrum, precentral gyrus and medial frontal gyrus (part of prefrontal cortex, possibly reflecting both top-down attention deployment and processing of bottom-up interoceptive signals from the heart) (Schulz, 2016).

References

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