



Are judgements of control negatively effected by high levels of anxiety?

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Background

Many who suffer from mental illnesses such as anxiety or depression often have trouble perceiving how their actions shape the surrounding environment.

However, healthy humans have been seen to show signs of belief that they may affect a situation which they have no control over e.g. a gambler's feeling as though he has control over the outcome of games of chance [1]

Some suggested these 'illusions of control' are due to a grandiose belief in one's influence over a situation. However, in a study conducted by Yon et al. (2020) it was found that participants were more likely to report agency over a situation when there was a high correlation between their actions and the observed outcome, shown in the figure below. For example: "If we always press the placebo button at a pre-programmed traffic light, the lights will never change without the press"[2] It's these spurious correlations that form the basis of these 'illusions of control'.

The helplessness theory states that the "expectation that important outcomes and responding are independent, causes the major motivational, cognitive & emotional symptoms of human depression" which are analogous with those of anxiety.[3]

Various studies have also established a link between parental control and childhood anxiety, implying that it could be learned as children that there is little correlation between their actions and the environment around them. [4] [5] [6]

Here we look at one's own judgement of control and how sensitive participants are, i.e. if they can correctly report agency, and how biased participants are towards reporting agency.

It is thought that those with higher levels of anxiety will be less inclined to report agency of a situation regardless of the correlations between action and outcome as they may be less sensitive to the controllability of their environment.

Hypotheses

- 1) Is sensitivity to control negatively related to self-reported anxiety?
- 2) Is bias to control negatively related to self-reported anxiety?
- 3) Is anxiety associated with a failure to calibrate the controllability of the environment?

Expected vs Preliminary Results

It is theorised that those with higher levels of anxiety will be biased towards under-reporting agency regardless of the controllability of the environment and so we expect more conservative values of c . We also expect lower d' values in those with higher anxiety scores.

Previous results have observed a decrease in sensitivity and more liberal c values from high to low control blocks. This effect seems to have been confirmed by the data collected for this project, however there is yet to be a link drawn between this and anxiety scores.

Experimental Design

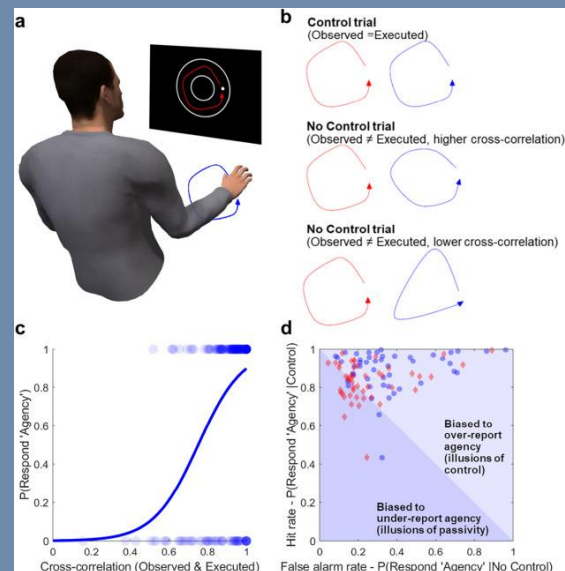
This study consisted of two tasks, an experimental task designed to establish sensitivity and bias to control and a self-report questionnaire of anxiety.

The main task involved the participant using their mouse to move a dot around the ring. Sometimes, the dot was controlled by the participant, and other times by the computer.

After each trial they were asked to judge whether they were in control of the dot or not. Using signal detection theory, we can establish the sensitivity, d' , and bias, c , in these judgement of control and compare to self-reports of anxiety to investigate correlations between them.

To answer the third question raised we need to manipulate the controllability of the environment. In high control blocks participants will be in control 70% of the time and in low control blocks this will be true for only 30% of trials.

It is hypothesised that those with high levels of anxiety should be impervious to this background manipulation.



Yon et al. 2020

[1] Langer, E. J. (1975). The illusion of control. *Journal of Personality and Social Psychology*, 32(2), 311–328
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