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Bored and vulnerable: Induced boredom and its effects on perceived control over uncontrollable outcomes

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Background

- Interest in boredom as a psychological construct is steadily increasing[1] and the functional relevance of boredom to the understanding of human behavior is beginning to emerge[2,3].
- Boredom is not consistently operationalized in the literature[4] and many studies fail to make the important distinction between state boredom (SB; the experience of feeling bored)[5] and trait boredom proneness (BP; an individual's propensity to experience boredom)[6].
- It has been suggested that boredom is an adaptive emotion with the evolutionary purpose of motivating individuals to reorient their goals when their environment has become unsatisfying[7].
- Another purportedly adaptive psychological phenomenon is the illusion of control[8], a phenomenon in which individuals tend to overestimate their capacity to control uncontrollable events, particularly when certain features of chance-based tasks cause them to resemble skill-based tasks when certain features of chance-based tasks cause them to resemble skill-based tasks[8,9].
- Considerable evidence links state boredom to depression[5,10,11], while depressed individuals tend to be less vulnerable to the illusion of control[12,13].
- However, despite the relationship between boredom and depression, and depression and illusory control, no research to date has investigated whether and how state boredom is associated with the illusion of control.
- This study explored the effect of an induced state of boredom on individuals' vulnerability to the IoC (VIoC).

Purpose & Hypotheses

Purpose

This study investigated if an induced state of boredom reduced vulnerability to the illusion of control (the tendency to overestimate the capacity to control uncontrollable events; VIoC), and if that effect was strengthened by higher levels of boredom proneness (individuals' propensity to experience boredom; BP).

Hypotheses

1. It was predicted that participants induced into a state of boredom would be less likely to attribute their perceived success on a task to skill (vs. luck), and less likely to believe they had control over their success.

2. It was predicted that this effect would be more pronounced for participants reporting high levels of BP.

Methods

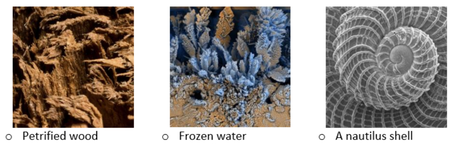
Participants

Participants (***N* = 276**) were aged 18-67 years (M_{age} = 35.01, *SD* = 9.33), were predominantly male (*n* = 167, 60.5%), Caucasian (63.8%), and college educated (54%). Participants were recruited via Amazon's Mechanical Turk and compensated USD1.00.

Materials

Vowel Cancellation Task[6]: Ps presented with 20-page story[a] for 15 mins. Experimental group instructed to count number of vowels and record response (boredom induction); control group instructed to read the story.

Illusion of Control Task[14]: Ps instructed to complete "*test of [their] ability to identify natural materials*" by identifying each of 10 indiscernible images from 3 incorrect options (see Figure 1). Ps receive same positive feedback regardless of performance ("*Congratulations! You scored in the 97th percentile! That means you scored better than 97% of all test takers!*").



- Petrified wood
- Corrugated cardboard
- Unrefined sucrose

- Frozen water
- Crystalline sugar
- Metal dirt particles

- A nautilus shell
- A plant cell of a fern
- A fossil of a gastropod

Figure 1. Example of questions in IoC Task.

Measures

Vulnerability to IoC measured using 3-item self-report scale,[14] assesses Ps' attribution of success ("*To what extent did luck contribute to your success?*"; "*To what extent did skill contribute to your success?*" and judgment of control ("*To what extent did you control the successful outcome you experienced?*").

State Boredom measured using State Boredom Measure (SBM)[5], an 8-item self-report questionnaire, assesses Ps' recollections and judgments about their boredom experiences over past 2 weeks.

Trait Boredom measured using Boredom Proneness Scale (BPS)[15], an 28-item self-report questionnaire, assesses an "individual's capacity (or failure) to engage in sufficiently satisfying activities."

Depression measured using the Beck Depression Inventory-II (BDI-II).[16]

Mindfulness measured using the Mindful Attention Awareness Scale (MAAS).[17]

Manipulation Check to ensure the boredom induction is successful. The State Boredom Attribution Scale (Todman, 2000), 10 questions measuring hedonic task appraisal and Ps' feelings in the moment, will be administered. Ps instructed to rate the task they just completed in terms of anxiety, amusement, boredom, enjoyment, and tedium, and to rate how they feel at that moment (e.g., "*I am bored*").

Results

Manipulation Check

- Groups did not differ significantly on demographics, BPS, SBM, BDI-II, or MAAS at the time of random assignment.
- Ps in the boredom condition were more than twice as likely to dropout during or after the boredom induction task, OR = 2.321, *p* = .002.
- Of remaining Ps with sufficient data for inclusion in the main analyses ('completers'; ***N* = 201**), Ps in the boredom condition rated the boredom induction task as significantly more boring than Ps in the control condition, *t*(199)= -2.067, *p* = .040.
- Together, these results indicated that the Vowel Cancellation Task successfully induced a state of boredom.

Main Analysis

- A one-way ANCOVA determined the effect of condition (boredom vs. control) on VIoC after adjusting for pre-assignment SB, BP, depression, and mindfulness.
- There was no significant difference between conditions, *F*(1,181) = 0.429, *p* = .513.
- Moderated linear regression revealed that while BP significantly predicted VIoC, *b* = 0.037, *p* = .001, neither condition nor the BP x condition interaction were significant predictors of VIoC.

Exploratory Analysis

- A post-hoc Mann-Whitney U test found that BPS scores for 'completers' in the boredom condition were significantly higher than in the control condition, *U* = 5707, *z* = 2.095, *p* = .036, indicating that dropouts in the boredom condition tended to have lower BP.
- A moderated logistic regression found that dropout was significantly predicted by a BP x condition interaction, b = -.038, SE = .017, p = .023, such that Ps in the boredom condition with low (-1 SD) BP were five times more likely to drop out than their counterparts in the control condition, OR = 5.083, *p* < .001 (see Figure 2).

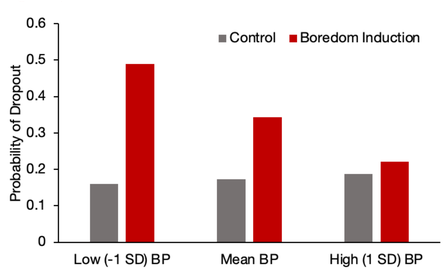


Figure 2. Probability of dropout according to condition and BP level

Discussion

- Contrary to expectations, induced boredom did not reduce VIoC.
- Surprisingly, high BP increased, rather than decreased, participants' VIoC.
- High BP participants may have a higher tolerance for boring experiences because they tend to perceive a higher level of control or agency over their experience (i.e., it is an experience they are choosing to endure).
- However, these findings should be treated with caution as they may have been affected by unbalanced attrition resulting in bias toward high BP among 'completers' in the boredom condition.
- Future research should attempt to replicate these results in conditions that limit the rate of dropout and resulting bias, such as by increasing compensation and/or requiring participants to perform the task in-person under supervision.
- Future research should also investigate the collateral results of this study, which indicate that BP may be associated with increased boredom tolerance, such that high BP individuals may be more likely to endure boring tasks.

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