**Metadata**

Title

Phenomenological Control, Visual Illusion Perception: A Pilot Study

Description

A pilot study to create a paradigm for testing Phenomenological Control using Visual Illusions in both implicit and explicit control conditions by manipulating attention with mindfullness and hypnosis scripts

Contributors

[Auz](https://osf.io/68ajz)

Category

Project

Affiliated institutions

No affiliated institutions

License

Year

2023

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Subjects

* Psychology
* Social and Behavioral Sciences
* Cognition and Perception
* Cognitive Psychology

Tags

No tags

**Study Information**

Hypotheses

Hypothesis 1 (Directional Hypothesis): Participants who receive the "implicit attentional instructions" (hypnosis-like induction) will perform better on the visual illusion task compared to the "explicit attentional instructions" (mindfulness induction) and the baseline condition without specific instructions.

**Design Plan**

Study type

Experiment - A researcher randomly assigns treatments to study subjects, this includes field or lab experiments. This is also known as an intervention experiment and includes randomized controlled trials.

Blinding

* For studies that involve human subjects, they will not know the treatment group to which they have been assigned.

Is there any additional blinding in this study?

No response

Study design

The study design for this research project is a between-subjects design with two experimental conditions: the "explicit attentional instructions" condition and the "implicit attentional instructions" condition. Participants will be randomly assigned to one of these two conditions, ensuring that each participant has an equal chance of being assigned to either group. Each participant will experience only one of the experimental conditions, either the "explicit attentional instructions" or the "implicit attentional instructions" condition. This design is chosen to avoid potential carryover effects or order effects that might occur in a within-subjects design. To ensure the groups are comparable at the start of the experiment, random assignment of participants to the two conditions will be conducted. This helps minimize systematic differences between the groups, increasing the internal validity of the study.

The main outcome measure for this study is the participants' performance in the visual illusion task. This performance can be quantified using reaction times, accuracy in making perceptual judgments, or other relevant measures obtained from the task. Additionally, physiological data, such as cardiac activity (measured through ECG) and EEG data (measuring alpha and beta band power) will be collected to serve as manipulation checks and provide further insights into participants' responses to the different instructional inductions.

No files selected

Randomization

No response

**Sampling Plan**

Existing Data

Registration prior to creation of data

Explanation of existing data

No response

Data collection procedures

Data Collection Procedures:

1. Population and Recruitment: The study aims to recruit a diverse population of participants. The target population will consist of individuals from various demographics, including university students and members of the community. Recruitment efforts will involve using university services, community outreach methods, and online platforms to reach potential participants.

2. Inclusion and Exclusion Criteria: To be eligible for participation, individuals must meet the following inclusion criteria: - Willingness to provide informed consent and participate in the experimental tasks. Exclusion criteria include: - Individuals under the age of 18- Inability to provide informed consent or complete the experimental tasks.

3. Informed Consent: Before participating in the study, potential participants will receive detailed information about the research project, its purpose, potential risks, and their rights as participants. They will be asked to provide written informed consent indicating their willingness to take part in the study.

4. Study Timeline: The study timeline will be determined based on the availability of participants and researchers. It will involve different stages, including recruitment, data collection, data analysis, and report writing. The exact duration of data gathering efforts will depend on the number of participants recruited and the availability of resources.

5. Data Collection Procedures: a. Experimental Tasks: Participants will first perform an illusion reaction-time task without specific instructions as a baseline condition. Then, they will be randomly assigned to one of the two conditions: "explicit attentional instructions" or "implicit attentional instructions." In the "explicit attentional instructions" condition, participants will receive mindfulness-like audio instructions, while in the "implicit attentional instructions" condition, participants will undergo a hypnosis-like induction. During the tasks, physiological data, including cardiac activity (ECG) and EEG data , will be collected using non-intrusive devices (BITalino and Muse-2 EEG headband). b. Questionnaires: Participants will be asked to complete different questionnaires, including the mini-IPIP6 and PID-5, before and after the experimental tasks. These questionnaires will assess normal and maladaptive personality traits.

6. Participant Compensation: Participants will be compensated for their time and participation. The compensation will be provided in accordance with the university's guidelines and regulations.

7. Data Handling and Privacy: Data collected during the study will be anonymized and securely stored. Participants' personal information will be kept confidential, and data will only be accessible to authorized researchers involved in the study.

8. Debriefing: After completing the experimental tasks, participants will undergo a thorough debriefing, where they will be provided with more information about the study's purpose and the expected outcomes. They will have the opportunity to ask questions and receive additional clarification as needed. Overall, the data collection procedures will adhere to ethical guidelines, ensuring participant privacy, informed consent, and careful handling of data throughout the study.

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Sample size

The sampling stage has not begun as of this pre-registration being written, due to it being a pilot study there will not be any more than 25 participants.

Sample size rationale

There is a time constraint of getting enough participants to make the pilot fruitful by the end of September 2023, there are limited funds to be used for recruitment.

Stopping rule

We will terminate any further data collection by the last week of September 2023

**Variables**

Manipulated variables

Manipulated Variable: Instructional Induction "Explicit Attentional Instructions" Condition Description: Participants in this condition will receive explicit attentional instructions before performing the visual illusion task. They will be instructed to focus their attention on the perceptual judgment target (e.g., the red stimuli) and away from the distractors (e.g., the black stimuli). Induction: Participants in this condition will experience a brief mindfulness-like audio clip before the visual illusion task. The audio clip will guide them to focus on their breathing and relax. "Implicit Attentional Instructions" Condition Description: Participants in this condition will receive implicit attentional instructions before performing the visual illusion task. They will be suggested to perceive only the relevant elements (e.g., the red stimuli) and ignore the distractors (e.g., the black stimuli). Induction: Participants in this condition will undergo a hypnosis-like induction similar to the SWASH procedure (Lush et al., 2018). The induction will involve an initial focus on relaxation and focusing inward, followed by focusing on the instructor's voice. These two levels of instructional induction (mindfulness-like vs. hypnosis-like) are designed to investigate how different attentional instructions may impact participants' performance in the visual illusion task. The manipulation of the instructional induction allows researchers to assess whether altering participants' attentional focus can influence their sensitivity to visual illusions.

No files selected

Measured variables

Visual Illusion Task Performance: This variable will capture participants' performance in the illusion reaction-time task. Performance can be measured using reaction times, accuracy in making perceptual judgments (e.g., identifying the longest line), or any other relevant metrics obtained from the task. The outcome will be quantifiable, reflecting participants' ability to perceive and judge the visual illusion accurately. Cardiac Activity (ECG): This variable will measure participants' cardiac activity using an Electrocardiogram (ECG) through the BITalino device. ECG data will be collected during the experimental tasks to provide insights into physiological responses related to attentional inductions and visual illusion processing. EEG Data (Alpha and Beta Band Power): EEG data will be collected using the portable dry-electrodes EEG headband (Muse-2). Specifically, the power in the alpha and beta frequency bands will be measured. This EEG data will serve as a manipulation check, providing information about participants' brainwave patterns during the different instructional inductions. Mini-IPIP6: This questionnaire will measure normal personality traits. It includes six factors: Extraversion, Agreeableness, Conscientiousness, Emotional Stability, Intellect, and Imagination. Each factor will be scored individually to assess participants' personality characteristics. PID-5: The Personality Inventory for DSM-5 (PID-5) will assess maladaptive personality traits. It includes five broad domains: Negative Affectivity, Detachment, Antagonism, Disinhibition, and Psychoticism. Each domain will be scored independently to evaluate participants' maladaptive personality traits.

No files selected

Indices

The specific items and scoring method for the mini-IPIP6 and PID-5 questionnaires were developed and validated by the respective authors (Sibley et al., 2011; Krueger et al., 2012) and will be followed accordingly.

No files selected

**Analysis Plan**

Statistical models

The analysis will be similar to that of (Makowski et al. 2022), which is available at https://github.com/RealityBending/IllusionGameValidation. The main analysis (including the preprocessing steps and the scores’ extraction method) has been pre-written and is available at https://github.com/RealityBending/IllusionGameReliability/releases/tag/v0.1.0. In brief, Bayesian mixed models are fitted to model the relationship between the parametric properties of the visual illusions (i.e., illusion strength and objective difference), and participants’ behavioural reactions i.e., their speed and accuracy in their responses. Individual scores will be extracted from these models and their factor structure will be assessed using structural equation modelling. Finally, Bayesian correlations will be used to investigate the relationship between illusion sensitivity scores and other dispositional characteristics.

No files selected

Transformations

NA

Inference criteria

Standard guidelines for assessing the certainty, size and Bayesian significance of effects will be used (see Makowski, Ben-Shachar, and Lüdecke 2019; Makowski et al. 2019).

Data exclusion

The preprocessing steps are available at https://github.com/RealityBending/IllusionGameReliability/blob/main/analysis/1\_Preprocessing.Rmd Outliers will be detected and removed based on their average RT and error rate (if implausibly fast) as well as based on the attention checks items included in the questionnaires.

Missing data

Missing data is prevented through the implementation of a forced-choice reaction-time behavioural task and questionnaires, in which the trial does not proceed to the next display until participants make a response.

Exploratory analysis

NA

**Other**

CITATIONS

Sibley, C. G. (2012). The Mini-IPIP6: Item Response theory analysis of a short measure of the big-six factors of personality in New Zealand. *New Zealand Journal of Psychology*, *41*(3).

Krueger, R. F., Derringer, J., Markon, K. E., Watson, D., & Skodol, A. E. (2012). Initial construction of a maladaptive personality trait model and inventory for DSM-5. *Psychological medicine*, *42*(9), 1879-1890.

Makowski, D., Te, A., Kirk, S., Liang, N. Z., & Chen, S. A. (2022). The illusion game: A novel experimental paradigm provides evidence for a general factor of visual illusion sensitivity and personality correlates.

Makowski, D., Ben-Shachar, M. S., & Lüdecke, D. (2019). bayestestR: Describing effects and their uncertainty, existence and significance within the Bayesian framework. *Journal of Open Source Software*, *4*(40), 1541.

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