

## **CONFIDENTIAL - FOR PEER-REVIEW ONLY**

### **2AFC Inattentional Blindness Experiment 3 – Red or Blue Line (#55297)**

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#### **1) Have any data been collected for this study already?**

No, no data have been collected for this study yet.

#### **2) What's the main question being asked or hypothesis being tested in this study?**

In an inattentional blindness paradigm, can observers who deny seeing a critical stimulus nevertheless discriminate its features at above-chance rates? We hypothesize that observers will exhibit significantly better than chance performance on a forced-response question about the color of an unexpected stimulus (e.g., "Was the line red or blue?"), even on trials where they deny noticing the stimulus under yes/no questioning (e.g., "Did you notice anything unusual on the last trial or not?").

#### **3) Describe the key dependent variable(s) specifying how they will be measured.**

The key dependent variables are (i) inattentional blindness (i.e., failure to notice the unexpected stimuli) as measured by yes/no report, and (ii) sensitivity and criterion for both yes/no and forced-response questions.

#### **4) How many and which conditions will participants be assigned to?**

All observers will complete four trials. At the beginning of each trial, observers will be asked to fixate a circle in the center of the display and press the spacebar when they are ready to start the trial. After a 1500ms delay, a cross will appear above or below the fixation circle (randomized for each trial). One arm of the cross will be longer (randomized for each trial), and observers will be asked to make a forced response after each trial as to which arm of the cross was longer (horizontal/vertical).

There is one between-subjects manipulation. On trial four (the critical trial), for 1/3 of subjects, a vertical red line (the IB stimulus) will appear simultaneously with the cross on the right or left side of the display. For another 1/3 of subjects, a blue line will appear simultaneously with the cross on the right or left side of the display. The side on which the line appears is randomized. Finally, the final 1/3 of subjects will not be shown any IB stimulus. Observers will then answer the "Which arm of the cross was longer?" question, followed by two additional questions:

- 1) "Did you notice anything unusual on the last trial which wasn't there on previous trials?" (yes/no)
- 2) "The last trial you just saw contained one extra element — a vertical line on one side of the box. What color was the extra line? If you don't know, or don't think any line appeared, take your best guess." (red/blue)

#### **5) Specify exactly which analyses you will conduct to examine the main question/hypothesis.**

Our primary analysis will be to derive signal detection statistics, including sensitivity and bias for y/n and forced-response questions. We will compare discriminative sensitivity to color (red vs. blue) in the IB stimulus-present condition to chance with a paired t-test. We will also compare the detectability of red and blue stimuli both to each other and to chance using paired t-tests.

We will also calculate % correct across observers for the forced-response question for trials where subjects fail to notice the unexpected stimulus (i.e., respond "no" to the yes/no "Did you notice anything unusual?" question), as is standard for IB studies. We will test to see if the % correct for the non-noticing group is significantly different from chance (50% correct) with a binomial probability test.

#### **6) Describe exactly how outliers will be defined and handled, and your precise rule(s) for excluding observations.**

Observers will be excluded if: (i) they incorrectly answer the "Which arm was longer?" question on any of the first three trials, (ii) they misidentify the number on an Ishihara color plate, or (iii) they fail to contribute a complete dataset.

#### **7) How many observations will be collected or what will determine sample size? No need to justify decision, but be precise about exactly how the number will be determined.**

We will collect data in batches of 100 until we reach 100 non-noticers, after exclusions, for both stimulus-present conditions. If we exceed 100 non-noticers, we will include those additional observers in the analysis.

#### **8) Anything else you would like to pre-register? (e.g., secondary analyses, variables collected for exploratory purposes, unusual analyses planned?)**

N/A