Intro to Psychology Project

Team Psycho

Hypothesis

The Stroop Effect can demonstrate the hierarchy of automaticity across different stimuli (Direction, Movement and Sound)

Stroop Effect

In Psychology, the Stroop Effect is the delay in reaction time between congruent and incongruent stimuli.

Random Variables and their Measurement

Time

Time taken to respond to the given stimuli according to the task

Accuracy

The number of correct responses to the stimuli corresponding to the task

Score

Single Blindedness 

The Participants are not told about stroop effect, and that the time and accuracy are measured.

Research Design

The research design chosen is within/repeated group, primarily due to the small sample size and there will be no effects from variations in individual differences between conditions

Stimuli

1. Direction
2. Movement
3. Sound

How one stimuli affects the response time for recognition of another stimuli.

We use three possible combinations of the stimuli, taken two at a time.

1) Movement + Direction

2) Direction + Sound

3) Movement + Sound

The task (direction/movement /sound) is identified by a colour associated with it.

Direction

If the background of the screen is Blue, participants are supposed to respond to Direction as a stimulus.

Movement

If the background of the screen is Red, participants are supposed to respond to Movement as a stimulus.

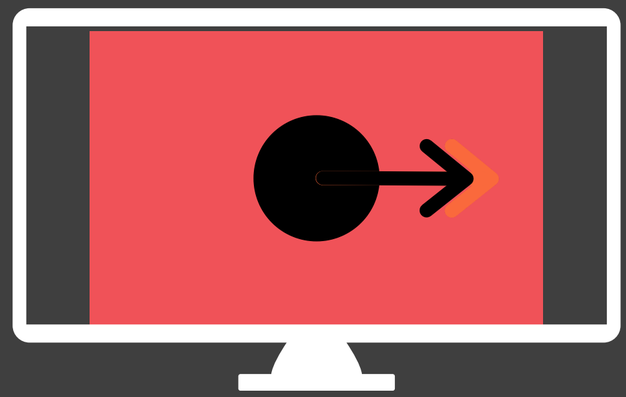
Sound

If the background of the screen is Green, participants are supposed to respond to Sound as a stimulus.

Neutral cases

Movement

With a red background, a black dot spawns at random locations on the screen and moves to right/ left.

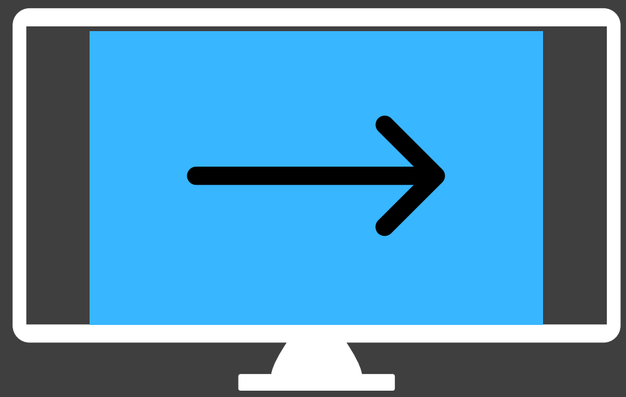


The user has to press the corresponding left/right key.

Neutral cases

Direction

With a blue background, black arrows pointing right/ left spawn at the centre of the screen.



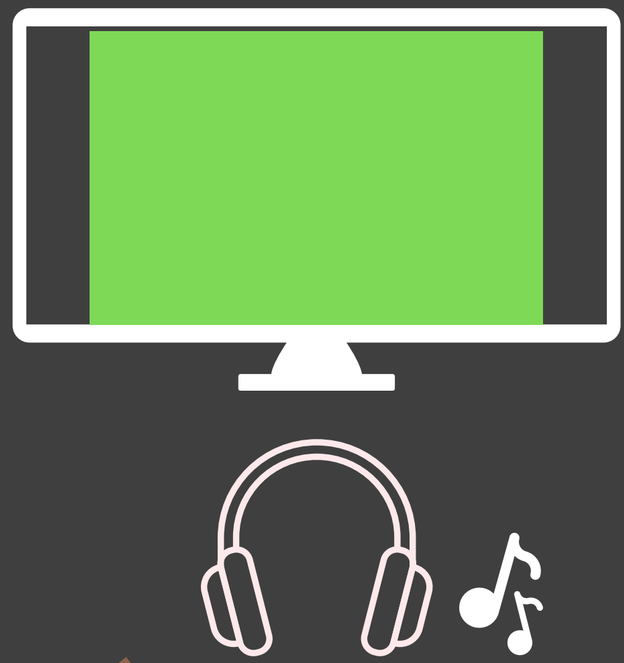
The user has to press the corresponding left/right key.

Neutral cases

Sound

With a green background, input beep is given to the left or right ear at random.

The user has to press the corresponding left/right key.

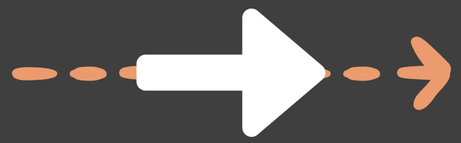


Conflict and Congruent cases

The user has to respond to the stimuli depending on the task which will be conveyed by the background of the screen.

Movement + Direction

Congruent



Arrow sign spawns at random locations on the screen and moves in the direction it is pointing

Conflict

Arrow sign spawns at random locations on the screen and moves in the opposite direction to which it points

Direction + Sound

Congruent

Arrow pointing left or right spawns on the screen and a beep is given as input to the ear on the same side as of the arrow.

Conflict

Arrow pointing left or right spawns on the screen and a beep is given as input to the ear on the opposite side as of the arrow.

Movement + Sound

Congruent

Dot spawns at random location on the screen moving left/right and a beep is given as input to the ear on the same side as the movement.

Conflict

Dot spawns at random location on the screen moving left/right and a beep is given as input to the ear on the opposite side as the movement.

Code base

We have built a experimental setup from scratch using pygame. The collected data has been logged well, for detailed analysis.

Github https://github.com/gerameet/PsYcho

Consent Form

We are taking consent from the participants for the experiment from this form. The form contains all the details and the participants are given the choiceto withdraw at any time during the experiment.

Form https://forms.gle/mX2cQMHQgwR8PrRa8

Predictions

The direction and movement are cognitively more related to each other than sound. The conflict in their case is expected to hamper the results more than the ones which involve sound.

Predictions

Sound > Movement > Direction

This is the ranking of the automaticity of stimuli that we expect to get from the data that we collect.

Statistical analysis

We are collecting the response time of the participant and the data for keys pressed during the experiment. We calculate an accuracy of the participant depending on the correct responses to the stimuli.

A final score is calculated taking into account the time and accuracy both.

Statistical analysis

We plan to do visual analysis of the results by plotting graphs to understand time and accuracy in across different settings - neutral/conflict/congruent. We also plan to get analysis for differemces in results due to dexterity, age etc.

Thank you :)

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