Trinity College Dublin
Coláiste na Tríonóide, Baile Átha Cliath
The University of Dublin

SCHOOL OF PSYCHOLOGY and INSTITUTE OF NEUROSCIENCE

TRINITY COLLEGE DUBLIN

Debriefing Sheet

Title of the research study:

The formation of multisensory object categories in adults: An online investigation

Background

Thank you for your participation in this study.

- In the categorisation of objects, it is assumed that all the senses contribute to their formation. So, for example, different types of dogs are categorised as 'dog' based on the shape of their bodies (vision) and the bark sound (audition). This is an example of how multiple senses are integrated to create our overall perception [1, 2].
- The ability to effectively integrate information is important, because it is associated with better object recognition [4].
- Object perception can be affected by object familiarity [3, 4, 5, and 9].
- Objects are organized in memory though a categorical hierarchical structure. For example, when seeing a rainbow, a common experience is to perceive stripes of colour despite the stimulus being a continuous wave of light. Green and yellow colours are more easily discriminable than two different shades of green (see Figure 1). This phenomenon is called categorical perception (CP) and it represents the ability of perceptual systems to adapt and facilitate efficient recognition. Familiar objects, facial expression and the sex of faces have been reported to be categorically perceived. [9, 10, 11]
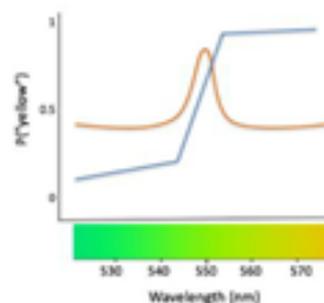
Figure 1 – On the left: a continuous wave of light. On the right: a graph illustrating the Categorical Perception phenomenon. In blue are shown the responses to categorization and in red are shown the responses to discrimination. The blue peak represents shift in categorization response, and the red peak represents the increase in discrimination responses.

- However, how sensory information contributes to the formation of categories is unknown.
- Object categories help us to recognise novel objects and allow us to interact with the things in the world.

The aim of this study was to investigate the visual similarity of objects that will be used in future studies. More specifically, the main goal was to assess the usability of visually presented objects to be used in future audio-visual experiments examining how multisensory information contributes to the formation of object categories in memory.

What tasks did you experience?

We presented you with a similarity rating task where you were asked how similar objects were ranging from "Very dissimilar" to "Very similar". This was with the hopes of determining the nature of the designed objects and whether they could be distinguished as two clear objects.

In our analysis, we will investigate where the category boundary lies between the two object categories presented. We do this by comparing the similarity judgments of each object pairing.

Importance of this research

Your data will contribute to our knowledge of how information from the senses contributes to our understanding of object categories. Object recognition is one of the most fundamental tasks that our human brain can perform, yet our understanding of how this is achieved is relatively poor. This study is therefore important because we hope to provide greater insight into the role of multisensory information in the representation and recognition of objects.

Contact details of the researchers

The principal investigator for this study is Prof. Fiona Newell.

If you have any questions or comments about this study, please contact us at the email address/phone number listed below:

Researchers

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References from our lab for further info:

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