

PSY1017 Cognitive Psychology with Research Methods 2015

Details for your Research Report

This document provides you with the details you will need to write your research report, and with a checklist for each of the sections. References for this document can be found at the end. Where I have written in note or bullet-point form, you should expand on this. Your report should be written in clear, grammatically correct English, i.e. in prose rather than in note or list form. Your academic tutor will discuss with you examples of good and bad research reports.

Abstract:

All the information you need to write your abstract will be contained in your report once you have completed it. I advise you to write the abstract last.

Abstract checklist (normally one sentence per point):

1. What is the background to the study?
2. What new question is this study addressing?
3. Who were the participants and what did they do?
4. What did you find?
5. What do the findings mean for the question you are addressing?

Here is an example abstract (modified from Bruce, Henderson, Newman & Burton, 2001) with annotations.

People can be inaccurate at matching unfamiliar faces shown in high-quality video images, even when viewpoint and facial expressions are closely matched. However, identification of highly familiar faces appears good, even when video quality is poor. Here we directly examined whether face matching performance differs for familiar and unfamiliar faces. 120 student participants were asked to verify whether a picture image matched a target face shown on video. Participants who were personally familiar with target items appearing on video were highly accurate at the verification task. Unfamiliar participants doing the same task performed very inaccurately. The results show that video evidence can be used effectively as a probe to identity when the faces shown are highly familiar to observers, but caution should be used where images of unfamiliar people are being compared.

Comment [K1]: Background; setting out the area of research and previous findings.

Comment [K2]: Setting up the research question.

Comment [K3]: The research question that the current study is addressing.

Comment [K4]: What the experimenters did to address the question i.e. what the task was and who the participants were.

Comment [K5]: What the results were.

Comment [K6]: What the theoretical and practical implications are.

Introduction:

Here are some notes which should help you to write the introduction. As stated in the Guidelines document, we are not expecting a long Introduction for this report. It should be possible to write the introduction to this report in less than 400 words.

- Background:
 - Matching two different facial images of an unfamiliar person is a difficult perceptual task
 - However, when the person is familiar it is much easier (e.g. Bruce et al., 2001)
 - Burton (2013) suggests that this is due to participants' prior experience of variability in the appearance of familiar faces
 - This difficulty in matching unfamiliar faces has huge practical implications – especially for security
- Current questions:
 - unclear whether participants are aware of how difficult it is to match facial images or whether instead they mistakenly rely on their own familiarity to predict others' performance

- unclear whether participants are able to judge true perceptual similarity between facial images
- We investigated whether the familiarity effect found by Bruce et al. (2001) extends to predictions of other people's performance and to judgements of perceptual similarity
- Independent variable: familiarity, manipulated by presenting target faces that were either of UK (familiar) or Australian (unfamiliar) celebrities
- Target face accompanied by matching or non-matching face (controlled for perceptual similarity)
- Participants verified whether face pairs matched; predicted performance of others on that pair of faces; judged perceptual similarity; and rated their own familiarity with the identity
- Four dependent variables: proportion correct; predicted performance; perceptual similarity; own familiarity
- If familiarity effect extends to predictions of others' performance, then predictions should be higher for familiar faces. However, if participants are aware of the true difficulty of the task then predictions should be the same for familiar and unfamiliar faces
- If familiarity effect extends to judgements of perceptual similarity, then similarity judgements should be higher for familiar faces. However, if participants are aware of the true perceptual similarity between images then similarity judgements should be the same for familiar and unfamiliar faces

Introduction checklist:

1. What was the aim of the study that you conducted?
2. What was the question (hypothesis) that it was examining?
3. What variable(s) did you manipulate (independent variable)?
4. What behaviour did you measure (dependent variable)?
5. What predictions are made by the alternative and null hypotheses?

Method:

Participants

- How many participants were tested?
- Age including mean and range?
- How many male/female, left/right handed, etc.?
- How were they sampled? You might like to say something along the lines of "X [number of] University of Surrey undergraduate psychology students participated in partial fulfilment of a course requirement."
- Randomly allocated to one of two counterbalancing groups

Stimuli/Apparatus/Materials

Stimuli: for each of 16 UK and Australian celebrities: three images (target image, matching image, familiarity check image), plus an additional image of an unknown person (non-matching image), controlled for perceptual similarity with the target image, all taken from online media sources. All 380 x 570 pixels.

The experiment was run with E-Prime software. Responses were made via the computer keyboard.

Design

- Familiarity of target face manipulated
- Within-participants, repeated measures design
- For each target, measured: proportion of correct responses to verification task; others' predicted performance; perceptual similarity between images; prior familiarity
- Whether a particular identity was presented with a matching or non-matching face was counterbalanced across participants

Comment [CC7]: Note that you don't have to label your hypotheses, the independent and dependent variables, and the predictions. If you read some journal articles you will notice that they don't always explicitly label their hypotheses, variables, and predictions. However, this information is always contained in the introduction and it is essential to understanding the study. If you are happy that you have made this information clear in the last paragraph of your introduction then you don't have to label it as such; but if you find it easier to label it (e.g. "The dependent variable was the proportion of correct responses") then that is fine too.

Procedure

- Conditions: participants were tested in exam conditions
- Experiment comprised three parts
- Part 1 tested matching accuracy and others' predicted performance
- Instructions: verify whether two images are of the same person or of two different people; predict how many other people out of 100 would get this correct
- On each of 32 trials, target image was presented randomly on left or right of the screen; matching or non-matching image was presented in the other location. Half of trials were of familiar targets and half unfamiliar; within these, half were presented with matching and half with non-matching images (counterbalanced as above). All trials presented in random order
- Participants asked to verify whether faces were of the same person
- Then asked to predict how many other people out of 100 would get this correct
- Pressed enter to move on to next trial (stimuli remained on screen until responses were made)
- Blank screen presented for 500 ms before next trial
- Part 2 tested perceptual similarity
- Instructions: rate perceptual similarity between the two images on a scale of 1-7
- 32 trials as for part 1 but in different random order (target presented with same image as in part 1)
- Participants asked to rate perceptual similarity between the two images
- Blank screen presented for 500 ms before next trial
- Part 3 checked pre-experiment familiarity with identities
- On each of 32 trials, familiarity check image presented in centre of screen. Trials presented in random order
- Participants asked to indicate whether this person was familiar to them before the experiment began
- Blank screen presented for 500 ms before next trial

Method checklist:

1. Participants
 - a. How many?
 - b. Demographics: age, gender, handedness, occupation, etc.
 - c. How sampled?
 - d. How randomised?
2. Stimuli/Apparatus/Materials
 - a. All specialised equipment and materials described?
 - b. Stimuli described in enough detail to allow replication?
 - c. Questionnaires etc. in appendix?
3. Design
 - a. Formal design identified?
 - b. Conditions (independent variables) described?
 - c. Outcome measure (dependent variable) listed?
 - d. Any further controls e.g. counterbalancing described?
4. Procedure
 - a. Have you described exactly what happened in enough detail to allow replication?
 - b. Test conditions
 - c. Instructions
 - d. Practice trials
 - e. Number of trials, blocks, rest periods, length of experiment

Results:

Pre-processing: For each participant, the following values were calculated for familiar and unfamiliar trials: proportion of correct responses on the verification task; mean predicted performance; mean perceptual similarity; total number of identities rated as familiar. Remember to check for outliers; if you remove any outlying values you need to report what your criteria were for doing so; you need to test your data for normality; and decide how (if at all) you are going to normalise your data if they aren't normal.

Descriptive statistics: You need to provide a measure of central tendency and variability for each of your dependent variables. It's up to you whether you want to display this as a table, graph or in text form. Make sure you don't make any claims about what your data show until you've used inferential statistics to test those claims.

Inferential tests: Another reminder: before performing any tests you need to check for normality (skewness and kurtosis). If your data are not normally distributed you need to choose an appropriate non-parametric test (see notes from your Statistics lectures) or to normalise your data. You need to justify the choice of whichever test you use (parametric or non-parametric). You then need to report the outcome of the tests and what they show. Remember to include effect sizes! See the Guidelines handout for further notes on how to report statistics. Please remember to write in full sentences!

Results checklist:

1. How were the data pre-processed?
2. Have you described the data using descriptive statistics?
3. Have you performed inferential tests on the data?
4. What do the inferential tests show?

Discussion:

Start with a very brief (1 sentence) reminder of what the study was investigating. Then work through the questions below. You don't need to include any statistics in the Discussion; they should all go in the Results section. However, don't make any unsupported claims here (i.e. claims that are not supported by the statistics in the Results).

Discussion checklist:

1. What are the main findings from your study?
2. What do the findings from your study suggest?
3. How did your study differ with respect to other studies that have examined the same phenomena? Link your results to the background literature.
4. Were there limitations due to the chosen experimental method? Which ones?
5. How would you improve your study or build on these results for future research?

References

- Bruce, V., Henderson, Z., Newman, C., & Burton, A. M. (2001). Matching identities of familiar and unfamiliar faces caught on CCTV images. *Journal of Experimental Psychology: Applied*, 7(3), 207-218.
- Burton, A. M. (2013). Why has research in face recognition progressed so slowly? The importance of variability. *The Quarterly Journal of Experimental Psychology*, 66(8), 1467-1485.