

1.2 Overview

You need to produce a report answering the tasks detailed in the two Coursework Tasks sections. In a separate file, you will also need to provide the R code which **exactly reproduces** your reported statistical results (that means numbers, tables, figures should match but excludes formatting differences).

We would like to draw your attention at the following differences from the USMR report:

- There are two parts to the coursework, each based on the two five-week blocks of the course. Address each part of the report as if it was a journal paper or your dissertation. In other words, think of each part of the report as a single standalone study. You should avoid answering a list of research questions, but providing a comprehensive analysis of the data in light of the question(s) of interest.
- We would recommend that for both parts of the coursework you write a methods section and a results section. The methods section should detail the appropriate analyses you undertook and how they will provide answers to the research questions. The results section should present and discuss your findings, utilising graphics where necessary to illustrate your points. Analyses will draw on the methodologies we have discussed in lectures and weekly exercises.

1.3 What you need to submit

You are required to submit 2 documents. Late penalties will apply until you have submitted BOTH files:

1. Your final compiled report, detailing your analyses, results, interpretation and conclusions. This should not include any R code (or R output printout), but only text, figures, and properly formatted tables.
 - This must be a PDF file (**.pdf** extension).
2. A file containing the R code used to generate your statistical results.
 - This can either be an R script (**.R** extension) or an Rmd file (**.Rmd** extension).

1.4 Tips for writing

For the tasks below, the compiled report (the **.pdf** file) is expected to include:

- A. **Clear written details of the analysis conducted** in order to answer the research questions, including transparency with regards to decisions made about the data prior to and during analysis.
- B. **Results**, in appropriate detail (for instance, a test statistic, standard error and p-value, not just one of these).
- C. **Presentation** of results where appropriate (in the form of tables or plots).
- D. **Interpretation** (in the form of a written text referencing relevant parts of your results) leading to a conclusion regarding the research questions.

The R code you submit in the R script or Rmd file should successfully implement the analysis described in A) leading to the same results reported in B). You should also include the code to produce C), unless you have used external software such as PowerPoint.

As the compiled report will not contain visible R code, a large part of the challenge comes in clearly describing all aspects of the analysis procedure.

A reader of your compiled document should be able to more or less replicate your analyses **without** referring to your R code.

IMPORTANT: Ensuring Reproducibility. Some functions (such as `fa.parallel()`), and processes such as bootstrapping, will involve randomly generating numbers, and so results will vary slightly each time you run them. To ensure that your results are reproducible, at the top of your code, use `set.seed()` to set the random seed. Choose a number (any length) and pass it to `set.seed()`. Then, every time you run random number generations, it will produce the same results.

For example:

```
set.seed(8675309) # This is an example, choose your own!
```

1.5 Report Formatting

The focus of this assignment is not on the formatting of RMarkdown files, but it is on implementing and interpreting analyses using R.

This means that you are more than welcome, for instance, to do your code in an R script and copy-paste your results into word, and then to subsequently make edits to your text and table formatting in the word document itself. When you are done with the editing and formatting, export your file to PDF and submit the PDF file.

Alternatively, you could work in the Rmd file, and then knit it to word. You can then do the final formatting edits in word. However, remember that if you knit again the Rmd file into word your edits in word will be lost. When you are done with the editing and formatting, export your file to PDF and submit the PDF file.

The important thing to remember is that the data analysis and statistical modelling results should match those from your R code.

A few things to keep in mind. In word, you must use:

- Times New Roman, Arial, or Calibri as font;
- At least a font size of 11;
- At least single line spacing.

1.6 Page limit

- **Your report should be no longer than 5 pages.**
- You may use an Appendix, which won't count towards the page limit, in which you can only place tables and figures (no text).

1.7 Grade penalties

- Ten points will be deducted from your final grade if your marker cannot determine how the results in your report were generated from your R code (for example, if a submitted R script produces values different from those reported, or if a submitted .Rmd document produces errors during knitting). This means that an 82 out of 100 becomes 72 out of 100.
- Submissions are considered late until **both** files are submitted on Turnitin.

1.8 Submission

Filenames

For both files which you submit, the filename should be your Exam Number with the appropriate extension, and nothing else.

For example, a student with exam number **B047847** would submit two files:

- **B047847.pdf**
- **B047847.R**

Where to submit

Go to the Assessments page on Learn, and look for “Assessment Submission”. There you will find an own-work declaration which requires marking as reviewed, before two submission boxes will be visible (one for each file).

1.9 Support opportunities

If you have any questions concerning the coursework report, we ask that you post them on the designated section of the online discussion forum.

If you have a question, it is likely that your course mates may have asked the same question. Before posting a question, please check the online forum in case it has already been answered.

1.10 Own work policy

- This is an individual assignment and you are expected to work on your own with respect to both R code and report.
- The use of AI tools is not permitted for any assessments in this course, including this report.
- You are not allowed to post any code or output related to this report on the discussion forum.
- Failure to comply with the above constitutes academic misconduct.

2 COURSEWORK TASKS

2.1 Part A

A study on individual differences in metaphor comprehension tested 76 participants on comprehension of 40 metaphors which were categorised as either ‘literary’ or ‘non-literary’. For example:

- “Literary”
 - A body is a prison for the soul.
 - The tongue is a bayonet.
 - The mind is a mountainous landscape.
- “Non Literary”
 - The nose is the antenna of scent.
 - Invention is the child of an inventor.
 - Purgatory is the lobby of heaven.

Participants also completed a measure of fluid intelligence / non-verbal problem solving (Raven’s Progressive Matrices, RPM) and crystalized intelligence / semantic knowledge (Semantic Similarities Test, SST).

Research Questions

1. Are “literary” metaphors harder to understand than “non-literary” metaphors? (Is comprehension accuracy lower?)
2. Is metaphor comprehension affected by fluid intelligence? Is fluid intelligence more important for comprehending literary or non-literary metaphors?
3. Is metaphor comprehension affected by semantic knowledge (crystalized intelligence)? Is semantic knowledge more important for comprehending literary or non-literary metaphors?

The data in **.RData** format is available at <https://uoepsy.github.io/data/metaphor.RData>, and a data dictionary can be found in Table 2.1.

Table 2.1: Metaphor Comprehension: Data Dictionary

variable	description
SubjectCode	Unique participant identifier
Age	Participant age at time of testing
RPM	Score on Raven’s Progressive Matrices (RPM) test of fluid intelligence (non-verbal problem solving). Number of matrices solved correctly (0-12)
SST	Score on Semantic Similarities Test (SST) of crystallized intelligence (semantic knowledge). Number of correct responses (19-37)
Gender	Participant gender (Male, Female, or not specified)
Item	Unique metaphor identifier
Correct	Participant’s comprehension of the metaphor statement (1 = Correct, 0 = Incorrect)
Condition	Metaphor type (Literary or Non-Literary)