

Assessment 2

PS923 - Methods and Analysis in Behavioural Science

Henrik Singmann - Autumn Term 2019 (updated: 2019-12-04)

- **This assessment counts for 33% of your overall grade.**
- **Submission Instructions:** Submit your solution as **one** **html** or **pdf** document containing both R code, R output, figures, and written out text (i.e., full sentences) to Tabula as “Assessment 2” until **Wednesday, 15. January 12:00 pm (noon)**.
- Please use RMarkdown to create the document.
- **Important:** Your document should be called **YOUR-STUDENT-ID_a2** (followed by the correct file extension). Please also add your student ID to the top of the document. To ensure anonymous marking, please refrain from using your name in either the document, script, or the file name.
- Your text does not need to contain references (i.e., references to scientific papers).

General Guidelines

Please complete the following questions. Your answer to each question should have two separate sections for each question, one immediately after the other.

In the first section write out your answers using complete sentences, as you might for the results section of a paper. Include descriptive statistics in the text, or in tables or figures as appropriate. Tables and figures should be of publication quality (i.e., fully labelled, etc.). Integrate inferential statistics into your description of the results. Your answers might be short. **Given the correctness/appropriateness of the statistical analysis, the first section will play the main role for your mark.**

The second section should include the complete R code that you used and its output. Add comments (after a #) to explain what the code does. The code should show all of the commands that you used, enough for me to replicate exactly what you did (I will be copying and pasting code to run it, so make sure that works). You can include figures here that you used to explore the data, if you do not wish to include in the first section. I will use the second section to help identify the source of any mistakes. For practical reports and papers you would only submit the first section, and thus the first section should stand alone without the second section.

For an example of such a solution, consult the assignment 1 sheet.

Task 1

The concept of risk preference has often been viewed as one of the key building blocks of economic theory and of human behaviour more generally. The main idea is that people differ in their willingness with which they prefer a more risky option versus a less risky option. For example, some people might be willing to invest their money in the stock market, which has the potential of larger wins but also large losses, whereas other people prefer putting their money in a savings account with low returns, but also lower risk that money will be lost. The present data set, `experience_gambles.csv`, contains data from an experiment investigating whether an individual's risk preference is dependent on their recent experiences. Particularly, the research question is whether a series of positive or negative experiences affects the expressed risk preference. To this end, participants are randomly assigned to one of three conditions, positive, mixed, or negative `experience`.

For each participant, the experiment consists of a series of trials in which participants have the choice between two 50/50 lotteries with the same expected value, but different variances. For example, participants might have a choice between lottery 1 with a 50% chance of losing \$150 or a 50% of losing \$100 and lottery 2 with a 50% chance of losing \$200 and a 50% chance of losing \$50. In each trial, choosing the lottery with higher variance (in the example, lottery 2) is considered as the risky choice (and coded as 1 in the data). Consequently, choosing the lottery with lower variance (in the example, lottery 1) is considered the non-risky choice (and coded as 0 in the data). To encourage participants to express their real risk preferences, each lottery is played out after each choice and participant's reimbursement is tied to the money they have won in the experiment (i.e., choices are incentivized).

In total, the experiment consists of three blocks of such choices and in blocks 1 and 3 these choices are identical across the three experience conditions. In these two blocks, participants have to make 18 choices; in half of the trials the expected value of the lotteries is positive and participants can only win money and in half of the trials the expected value is negative and participants can only lose money (as in the example choice given above). The only differences between the condition is in block 2. Here, all participants also see a set of 18 gambles half of which have a positive expected value (i.e., win lotteries) and half of which have a negative expected value (i.e., loss lotteries). In addition to that, participants have to make an additional set of 18 choices depending on their condition. In the positive condition, all the additional choices have a positive expected outcome (i.e., win lotteries); in the negative condition, all the additional choices have a negative expected outcome (i.e., loss lotteries); and in the mixed condition half of the additional choices have a positive and half have a negative expected outcome.

The data set `experience_gambles.csv` contains the data of the 54 trials which are the same in all conditions (i.e., all trials from block 1 and 3 as well as the 18 mixed trials of block 2 that are the same in all conditions) in a wide format. The first three characters of the columns containing the responses determine the block and the remaining characters determine the gamble within a block. Your task is to analyse the data with an ANOVA (e.g., with `afex`) and address the research question whether a series of positive or negative experiences (compared to mixed experiences) affects the probability with which participants choose more risky lotteries within the blocks. In other words, are risk preferences stable or affected by recent experiences? Your ANOVA should include all the observations of the experiment (but does not need to consider `Order`).

Task 2

One research question in moral psychology is which factors people consider when judging moral transgressions. One factor that could affect how much people condemn a certain act is the severity of an act. As an example, consider the case of a bully in school. It makes intuitive sense to assume that people will condemn a bully more strongly the more often they bully a classmate. More specifically, one could assume that the moral wrongness of bullying will be judged more harshly if the bullying takes place every week versus only once per school term. However, maybe severity of an act has not the same effect on all domains of moral transgressions. Consider for example someone who eats the flesh of a dead person. In such a case, does it matter for your moral judgment whether they eat a small amount or a large amount of flesh from the dead person?

In the literature, these two different domains of moral transgressions are called harm transgressions (e.g., violence, maltreatment) and purity transgressions (e.g., sacrilege, deviant sexual acts), respectively. The file `moral_study.csv` contains data from an experiment in which people were shown both domains of moral transgressions (variable `Domain`) and were asked to judge how morally wrong each transgression was on a scale from 0 (“not wrong at all”) to 100 (“extremely”). The research question was whether changing the severity (variable `Dose` with levels `Low` and `High`) of the moral transgression affects judgments for transgressions in both domains equally. Severity was manipulated in one of two ways (variable `DoseType`): For **Frequency** transgressions, severity was manipulated via the frequency of the moral transgression. For **Magnitude** transgressions, severity was manipulated via the magnitude of the moral transgression. The following lists an example of a transgression in each of the 8 cells of the design (`Dose` manipulation is shown in square brackets []). Note that participants provided more than one responses per cell of the design.

- **Harm & Frequency:** Someone purposely knocks a sibling unconscious on [one occasion/many occasions].
- **Purity & Frequency:** Someone has protected sex with a sibling on [one occasion/many occasions].
- **Harm & Magnitude:** Someone throws a [small/large] rock at a farm animal.
- **Purity & Magnitude:** Someone eats a [small/large] amount of flesh from a dead person.

For each statement participants are asked: How morally wrong was the action?

Analyse this data with a repeated-measures (within-subjects) ANOVA (e.g., using `afex`). The hypothesis is that the effect of severity (i.e., `Dose`) is stronger (or only present) for harm compared to purity transgressions. Variable `DoseType` serves mainly control purposes, but should also be considered.