PreregistrationEvaluation\_Main\_Analysis

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# Install packages

library(tidyverse)  
library(jaspGraphs)

# Source R scripts

r\_scripts <- list.files("R/", full.names = TRUE)  
walk(r\_scripts, source)

# Importing data

processed <- read\_tsv("Data/Main/Processed/PreregistrationEvaluation\_Main\_Processed.tsv")

# Descriptives

## Number of respondents

There are 355 individual responses used for the analysis.

## Median time of responding to the survey

processed %>%   
 mutate(duration\_in\_seconds = as.integer(duration\_in\_seconds)) %>%   
 summarise(median\_resp = median(duration\_in\_seconds) / 60)

## # A tibble: 1 x 1  
## median\_resp  
## <dbl>  
## 1 3.18

# Responses by control or prereg group for all survey questions

## Data preprocessing

Variables that store the responses to the survey questions.

vars <- c("planning", "recommend", "hypothesis", "design", "analysis", "rdm", "workflow", "collab", "preparatory", "duration", "stress", "qrp")  
  
groups <- c("control", "prereg")

Calculating the counts and proportions of each subgroup. *note: There is an NA subgroup for the “position” question which was not an answer option in the survey but based on one respondents comment we dropped his answer to this question.*

List all the questions for each group.

survey\_questions <-  
 expand\_grid(groups = groups,  
 vars = vars)

Get the levels of each question per group. Some questions has different labels depending on which group the respondents belongs to as questions were worded differently for the preregistration and the control group. See the survey materials for more detail.

The level\_present function shows which response levels appeared in the data and which response levels were not chosen by any of the participants.

The get\_levels function extracts all the response levels into a character vector.

survey\_questions <-  
 survey\_questions %>%   
 mutate(var\_level\_present = purrr::map2(groups, vars,  
 ~ level\_present(  
 df = processed,  
 group\_name = .x,  
 var\_name = .y,  
 factor\_group = .x,  
 group\_var = group)),  
 var\_level\_labels = purrr::map2(groups, vars,  
 ~ get\_levels(  
 df = processed,  
 group\_name = .x,  
 var\_name = .y,  
 factor\_group = .x,  
 group\_var = group)))

Calculate the count for all the levels of all the questions per group. Levels with no responses are also included with 0 for the count. For each question per group these summarized information will be nested in one list type column.

survey\_questions <-  
 survey\_questions %>%   
 mutate(var\_desc = purrr::map2(groups, vars,  
 ~ level\_count(  
 df = processed,  
 group\_name = .x,  
 var\_name = .y,  
 group\_var = group,  
 factor\_group = .x)))

Create one table out of nested information with more descriptive variable and question names.

survey\_questions\_table <-   
 survey\_questions %>%   
 select(groups, vars, var\_desc) %>%   
 unnest(var\_desc) %>%   
 dplyr::group\_by(groups, vars) %>%   
 dplyr::mutate(N = sum(n),  
 prop = round(n / N \* 100, 2)) %>%   
 select(-N, -levels\_int) %>%   
 mutate(vars = vars\_rename(vars)) %>%   
 arrange(vars, groups) %>%   
 rename(`Survey question` = vars,  
 Group = groups,  
 Levels = levels,  
 `Number of responses` = n,  
 `Proportion of the level` = prop)

Create an APA formatted table for the paper.

papaja::apa\_table(  
 survey\_questions\_table,  
 caption = "A Full Summary of All Survey Questions Per Group",  
 escape = TRUE  
)

(#tab:unnamed-chunk-10)

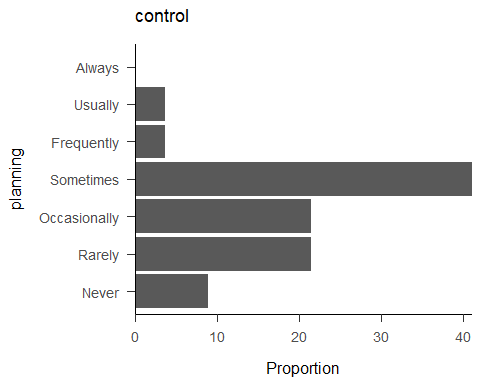
*A Full Summary of All Survey Questions Per Group*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Group | Survey question | Levels | Number of responses | Proportion of the level |
| control | Analysis Plan | 1 |  |  |
| Would get | less thought-through 4.00 7.14 |  |  |  |
| control | Analysis Plan | 2 | 0.00 | 0.00 |
| control | Analysis Plan | 3 | 3.00 | 5.36 |
| control | Analysis Plan | 4 |  |  |
| Would not | change 14.00 25.00 |  |  |  |
| control | Analysis Plan | 5 | 12.00 | 21.43 |
| control | Analysis Plan | 6 | 9.00 | 16.07 |
| control | Analysis Plan | 7 |  |  |
| Would get | more thought-through 13.00 23.21 |  |  |  |
| control | Analysis Plan | I do not know | 1.00 | 1.79 |
| control | Analysis Plan | Not applicable | 0.00 | 0.00 |
| prereg | Analysis Plan | 1 |  |  |
| Got less t | hought-through 0.00 0.00 |  |  |  |
| prereg | Analysis Plan | 2 | 0.00 | 0.00 |
| prereg | Analysis Plan | 3 | 2.00 | 0.67 |
| prereg | Analysis Plan | 4 |  |  |
| Did not ch | ange 43.00 14.38 |  |  |  |
| prereg | Analysis Plan | 5 | 50.00 | 16.72 |
| prereg | Analysis Plan | 6 | 60.00 | 20.07 |
| prereg | Analysis Plan | 7 |  |  |
| Got more t | hought-through 144.00 48.16 |  |  |  |
| prereg | Analysis Plan | I do not know | 0.00 | 0.00 |
| prereg | Analysis Plan | Not applicable | 0.00 | 0.00 |
| control | Collaboration in the Team | 1 |  |  |
| Would get | worse 3.00 5.36 |  |  |  |
| control | Collaboration in the Team | 2 | 1.00 | 1.79 |
| control | Collaboration in the Team | 3 | 3.00 | 5.36 |
| control | Collaboration in the Team | 4 |  |  |
| Would not | change 38.00 67.86 |  |  |  |
| control | Collaboration in the Team | 5 | 3.00 | 5.36 |
| control | Collaboration in the Team | 6 | 0.00 | 0.00 |
| control | Collaboration in the Team | 7 |  |  |
| Would get | better 1.00 1.79 |  |  |  |
| control | Collaboration in the Team | I do not know | 6.00 | 10.71 |
| control | Collaboration in the Team | Not applicable | 1.00 | 1.79 |
| prereg | Collaboration in the Team | 1 |  |  |
| Got worse | 0.00 0.00 |  |  |  |
| prereg | Collaboration in the Team | 2 | 2.00 | 0.67 |
| prereg | Collaboration in the Team | 3 | 10.00 | 3.34 |
| prereg | Collaboration in the Team | 4 |  |  |
| Did not ch | ange 178.00 59.53 |  |  |  |
| prereg | Collaboration in the Team | 5 | 49.00 | 16.39 |
| prereg | Collaboration in the Team | 6 | 23.00 | 7.69 |
| prereg | Collaboration in the Team | 7 |  |  |
| Got better | 28.00 9.36 |  |  |  |
| prereg | Collaboration in the Team | I do not know | 5.00 | 1.67 |
| prereg | Collaboration in the Team | Not applicable | 4.00 | 1.34 |
| control | Consider Preregistration in Future Work | Never | 5.00 | 8.93 |
| control | Consider Preregistration in Future Work | Rarely | 12.00 | 21.43 |
| control | Consider Preregistration in Future Work | Occasionally | 12.00 | 21.43 |
| control | Consider Preregistration in Future Work | Sometimes | 23.00 | 41.07 |
| control | Consider Preregistration in Future Work | Frequently | 2.00 | 3.57 |
| control | Consider Preregistration in Future Work | Usually | 2.00 | 3.57 |
| control | Consider Preregistration in Future Work | Always | 0.00 | 0.00 |
| prereg | Consider Preregistration in Future Work | Never | 2.00 | 0.67 |
| prereg | Consider Preregistration in Future Work | Rarely | 4.00 | 1.34 |
| prereg | Consider Preregistration in Future Work | Occasionally | 7.00 | 2.34 |
| prereg | Consider Preregistration in Future Work | Sometimes | 38.00 | 12.71 |
| prereg | Consider Preregistration in Future Work | Frequently | 49.00 | 16.39 |
| prereg | Consider Preregistration in Future Work | Usually | 129.00 | 43.14 |
| prereg | Consider Preregistration in Future Work | Always | 70.00 | 23.41 |
| control | Experimental Design | 1 |  |  |
| Would get | less thought-through 3.00 5.36 |  |  |  |
| control | Experimental Design | 2 | 0.00 | 0.00 |
| control | Experimental Design | 3 | 1.00 | 1.79 |
| control | Experimental Design | 4 |  |  |
| Would not | change 24.00 42.86 |  |  |  |
| control | Experimental Design | 5 | 10.00 | 17.86 |
| control | Experimental Design | 6 | 7.00 | 12.50 |
| control | Experimental Design | 7 |  |  |
| Would get | more thought-through 9.00 16.07 |  |  |  |
| control | Experimental Design | I do not know | 1.00 | 1.79 |
| control | Experimental Design | Not applicable | 1.00 | 1.79 |
| prereg | Experimental Design | 1 |  |  |
| Got less t | hought-through 0.00 0.00 |  |  |  |
| prereg | Experimental Design | 2 | 0.00 | 0.00 |
| prereg | Experimental Design | 3 | 1.00 | 0.33 |
| prereg | Experimental Design | 4 |  |  |
| Did not ch | ange 109.00 36.45 |  |  |  |
| prereg | Experimental Design | 5 | 49.00 | 16.39 |
| prereg | Experimental Design | 6 | 60.00 | 20.07 |
| prereg | Experimental Design | 7 |  |  |
| Got more t | hought-through 76.00 25.42 |  |  |  |
| prereg | Experimental Design | I do not know | 1.00 | 0.33 |
| prereg | Experimental Design | Not applicable | 3.00 | 1.00 |
| control | Preparatory Work | 1 |  |  |
| Would get | worse 4.00 7.14 |  |  |  |
| control | Preparatory Work | 2 | 3.00 | 5.36 |
| control | Preparatory Work | 3 | 2.00 | 3.57 |
| control | Preparatory Work | 4 |  |  |
| Would not | change 16.00 28.57 |  |  |  |
| control | Preparatory Work | 5 | 15.00 | 26.79 |
| control | Preparatory Work | 6 | 10.00 | 17.86 |
| control | Preparatory Work | 7 |  |  |
| Would impr | ove 5.00 8.93 |  |  |  |
| control | Preparatory Work | I do not know | 1.00 | 1.79 |
| control | Preparatory Work | Not applicable | 0.00 | 0.00 |
| prereg | Preparatory Work | 1 |  |  |
| Got worse | 1.00 0.33 |  |  |  |
| prereg | Preparatory Work | 2 | 1.00 | 0.33 |
| prereg | Preparatory Work | 3 | 6.00 | 2.01 |
| prereg | Preparatory Work | 4 |  |  |
| Did not ch | ange 74.00 24.75 |  |  |  |
| prereg | Preparatory Work | 5 | 86.00 | 28.76 |
| prereg | Preparatory Work | 6 | 49.00 | 16.39 |
| prereg | Preparatory Work | 7 |  |  |
| Improved | 76.00 25.42 |  |  |  |
| prereg | Preparatory Work | I do not know | 2.00 | 0.67 |
| prereg | Preparatory Work | Not applicable | 4.00 | 1.34 |
| control | Preregistration Prevents Questionable Research Practices | Very Strongly Disagree | 3.00 | 5.36 |
| control | Preregistration Prevents Questionable Research Practices | Strongly Disagree | 0.00 | 0.00 |
| control | Preregistration Prevents Questionable Research Practices | Disagree | 7.00 | 12.50 |
| control | Preregistration Prevents Questionable Research Practices | Neither Agree or Disagree | 7.00 | 12.50 |
| control | Preregistration Prevents Questionable Research Practices | Agree | 24.00 | 42.86 |
| control | Preregistration Prevents Questionable Research Practices | Strongly Agree | 10.00 | 17.86 |
| control | Preregistration Prevents Questionable Research Practices | Very Strongly Agree | 5.00 | 8.93 |
| control | Preregistration Prevents Questionable Research Practices | I do not know | 0.00 | 0.00 |
| control | Preregistration Prevents Questionable Research Practices | Not applicable | 0.00 | 0.00 |
| prereg | Preregistration Prevents Questionable Research Practices | Very Strongly Disagree | 5.00 | 1.67 |
| prereg | Preregistration Prevents Questionable Research Practices | Strongly Disagree | 4.00 | 1.34 |
| prereg | Preregistration Prevents Questionable Research Practices | Disagree | 12.00 | 4.01 |
| prereg | Preregistration Prevents Questionable Research Practices | Neither Agree or Disagree | 34.00 | 11.37 |
| prereg | Preregistration Prevents Questionable Research Practices | Agree | 94.00 | 31.44 |
| prereg | Preregistration Prevents Questionable Research Practices | Strongly Agree | 79.00 | 26.42 |
| prereg | Preregistration Prevents Questionable Research Practices | Very Strongly Agree | 70.00 | 23.41 |
| prereg | Preregistration Prevents Questionable Research Practices | I do not know | 1.00 | 0.33 |
| prereg | Preregistration Prevents Questionable Research Practices | Not applicable | 0.00 | 0.00 |
| control | Project Workflow | 1 |  |  |
| Would get | less thought-through 3.00 5.36 |  |  |  |
| control | Project Workflow | 2 | 1.00 | 1.79 |
| control | Project Workflow | 3 | 0.00 | 0.00 |
| control | Project Workflow | 4 |  |  |
| Would not | change 27.00 48.21 |  |  |  |
| control | Project Workflow | 5 | 16.00 | 28.57 |
| control | Project Workflow | 6 | 1.00 | 1.79 |
| control | Project Workflow | 7 |  |  |
| Would get | more thought-through 3.00 5.36 |  |  |  |
| control | Project Workflow | I do not know | 5.00 | 8.93 |
| control | Project Workflow | Not applicable | 0.00 | 0.00 |
| prereg | Project Workflow | 1 |  |  |
| Got less t | hought-through 0.00 0.00 |  |  |  |
| prereg | Project Workflow | 2 | 1.00 | 0.33 |
| prereg | Project Workflow | 3 | 3.00 | 1.00 |
| prereg | Project Workflow | 4 |  |  |
| Did not ch | ange 122.00 40.80 |  |  |  |
| prereg | Project Workflow | 5 | 83.00 | 27.76 |
| prereg | Project Workflow | 6 | 40.00 | 13.38 |
| prereg | Project Workflow | 7 |  |  |
| Got more t | hought-through 43.00 14.38 |  |  |  |
| prereg | Project Workflow | I do not know | 5.00 | 1.67 |
| prereg | Project Workflow | Not applicable | 2.00 | 0.67 |
| control | Recommend Preregistration To Colleagues | Very Strongly Disagree | 4.00 | 7.14 |
| control | Recommend Preregistration To Colleagues | Strongly Disagree | 1.00 | 1.79 |
| control | Recommend Preregistration To Colleagues | Disagree | 2.00 | 3.57 |
| control | Recommend Preregistration To Colleagues | Neither Agree or Disagree | 24.00 | 42.86 |
| control | Recommend Preregistration To Colleagues | Agree | 20.00 | 35.71 |
| control | Recommend Preregistration To Colleagues | Strongly Agree | 5.00 | 8.93 |
| control | Recommend Preregistration To Colleagues | Very Strongly Agree | 0.00 | 0.00 |
| control | Recommend Preregistration To Colleagues | I do not know | 0.00 | 0.00 |
| control | Recommend Preregistration To Colleagues | Not applicable | 0.00 | 0.00 |
| prereg | Recommend Preregistration To Colleagues | Very Strongly Disagree | 12.00 | 4.01 |
| prereg | Recommend Preregistration To Colleagues | Strongly Disagree | 1.00 | 0.33 |
| prereg | Recommend Preregistration To Colleagues | Disagree | 4.00 | 1.34 |
| prereg | Recommend Preregistration To Colleagues | Neither Agree or Disagree | 17.00 | 5.69 |
| prereg | Recommend Preregistration To Colleagues | Agree | 82.00 | 27.42 |
| prereg | Recommend Preregistration To Colleagues | Strongly Agree | 100.00 | 33.44 |
| prereg | Recommend Preregistration To Colleagues | Very Strongly Agree | 83.00 | 27.76 |
| prereg | Recommend Preregistration To Colleagues | I do not know | 0.00 | 0.00 |
| prereg | Recommend Preregistration To Colleagues | Not applicable | 0.00 | 0.00 |
| control | Research Data Management | 1 |  |  |
| Would get | less thought-through 3.00 5.36 |  |  |  |
| control | Research Data Management | 2 | 0.00 | 0.00 |
| control | Research Data Management | 3 | 0.00 | 0.00 |
| control | Research Data Management | 4 |  |  |
| Would not | change 37.00 66.07 |  |  |  |
| control | Research Data Management | 5 | 8.00 | 14.29 |
| control | Research Data Management | 6 | 3.00 | 5.36 |
| control | Research Data Management | 7 |  |  |
| Would get | more thought-through 4.00 7.14 |  |  |  |
| control | Research Data Management | I do not know | 1.00 | 1.79 |
| control | Research Data Management | Not applicable | 0.00 | 0.00 |
| prereg | Research Data Management | 1 |  |  |
| Got less t | hought-through 0.00 0.00 |  |  |  |
| prereg | Research Data Management | 2 | 0.00 | 0.00 |
| prereg | Research Data Management | 3 | 1.00 | 0.33 |
| prereg | Research Data Management | 4 |  |  |
| Did not ch | ange 132.00 44.15 |  |  |  |
| prereg | Research Data Management | 5 | 70.00 | 23.41 |
| prereg | Research Data Management | 6 | 39.00 | 13.04 |
| prereg | Research Data Management | 7 |  |  |
| Got more t | hought-through 51.00 17.06 |  |  |  |
| prereg | Research Data Management | I do not know | 2.00 | 0.67 |
| prereg | Research Data Management | Not applicable | 4.00 | 1.34 |
| control | Research Hypothesis | 1 |  |  |
| Would get | less thought-through 3.00 5.36 |  |  |  |
| control | Research Hypothesis | 2 | 1.00 | 1.79 |
| control | Research Hypothesis | 3 | 1.00 | 1.79 |
| control | Research Hypothesis | 4 |  |  |
| Would not | change 15.00 26.79 |  |  |  |
| control | Research Hypothesis | 5 | 11.00 | 19.64 |
| control | Research Hypothesis | 6 | 11.00 | 19.64 |
| control | Research Hypothesis | 7 |  |  |
| Would get | more thought-through 12.00 21.43 |  |  |  |
| control | Research Hypothesis | I do not know | 2.00 | 3.57 |
| control | Research Hypothesis | Not applicable | 0.00 | 0.00 |
| prereg | Research Hypothesis | 1 |  |  |
| Got less t | hought-through 0.00 0.00 |  |  |  |
| prereg | Research Hypothesis | 2 | 0.00 | 0.00 |
| prereg | Research Hypothesis | 3 | 2.00 | 0.67 |
| prereg | Research Hypothesis | 4 |  |  |
| Did not ch | ange 74.00 24.75 |  |  |  |
| prereg | Research Hypothesis | 5 | 55.00 | 18.39 |
| prereg | Research Hypothesis | 6 | 68.00 | 22.74 |
| prereg | Research Hypothesis | 7 |  |  |
| Got more t | hought-through 98.00 32.78 |  |  |  |
| prereg | Research Hypothesis | I do not know | 1.00 | 0.33 |
| prereg | Research Hypothesis | Not applicable | 1.00 | 0.33 |
| control | Total Project Duration | 1 |  |  |
| Would be l | onger 8.00 14.29 |  |  |  |
| control | Total Project Duration | 2 | 10.00 | 17.86 |
| control | Total Project Duration | 3 | 14.00 | 25.00 |
| control | Total Project Duration | 4 |  |  |
| Would not | change 14.00 25.00 |  |  |  |
| control | Total Project Duration | 5 | 2.00 | 3.57 |
| control | Total Project Duration | 6 | 2.00 | 3.57 |
| control | Total Project Duration | 7 |  |  |
| Would be s | horter 0.00 0.00 |  |  |  |
| control | Total Project Duration | I do not know | 6.00 | 10.71 |
| control | Total Project Duration | Not applicable | 0.00 | 0.00 |
| prereg | Total Project Duration | 1 |  |  |
| Was longer | 33.00 11.04 |  |  |  |
| prereg | Total Project Duration | 2 | 49.00 | 16.39 |
| prereg | Total Project Duration | 3 | 98.00 | 32.78 |
| prereg | Total Project Duration | 4 |  |  |
| Did not ch | ange 88.00 29.43 |  |  |  |
| prereg | Total Project Duration | 5 | 13.00 | 4.35 |
| prereg | Total Project Duration | 6 | 3.00 | 1.00 |
| prereg | Total Project Duration | 7 |  |  |
| Was shorte | r 3.00 1.00 |  |  |  |
| prereg | Total Project Duration | I do not know | 11.00 | 3.68 |
| prereg | Total Project Duration | Not applicable | 1.00 | 0.33 |
| control | Work-related Stress | 1 |  |  |
| Would be i | ncreased 10.00 17.86 |  |  |  |
| control | Work-related Stress | 2 | 9.00 | 16.07 |
| control | Work-related Stress | 3 | 7.00 | 12.50 |
| control | Work-related Stress | 4 |  |  |
| Would not | change 16.00 28.57 |  |  |  |
| control | Work-related Stress | 5 | 5.00 | 8.93 |
| control | Work-related Stress | 6 | 2.00 | 3.57 |
| control | Work-related Stress | 7 |  |  |
| Would be r | educed 1.00 1.79 |  |  |  |
| control | Work-related Stress | I do not know | 6.00 | 10.71 |
| control | Work-related Stress | Not applicable | 0.00 | 0.00 |
| prereg | Work-related Stress | 1 |  |  |
| Was increa | sed 13.00 4.35 |  |  |  |
| prereg | Work-related Stress | 2 | 20.00 | 6.69 |
| prereg | Work-related Stress | 3 | 75.00 | 25.08 |
| prereg | Work-related Stress | 4 |  |  |
| Did not ch | ange 138.00 46.15 |  |  |  |
| prereg | Work-related Stress | 5 | 27.00 | 9.03 |
| prereg | Work-related Stress | 6 | 11.00 | 3.68 |
| prereg | Work-related Stress | 7 |  |  |
| Was reduce | d 9.00 3.01 |  |  |  |
| prereg | Work-related Stress | I do not know | 5.00 | 1.67 |
| prereg | Work-related Stress | Not applicable | 1.00 | 0.33 |

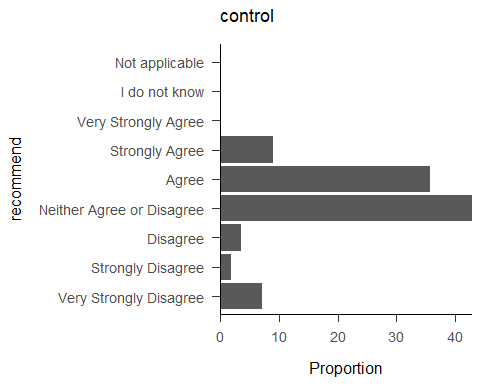
We visualize the content of the table as barcharts for each question per group. These plot will not be necessarily included in the paper, but they can aid further investigation of the data.

survey\_questions <-  
 survey\_questions %>%   
 mutate(plot = map2(groups, vars,  
 ~ apa\_barplot(  
 df = processed,  
 group\_name = .x,  
 var\_name = .y,  
 group\_var = group,  
 factor\_group = .x)))  
  
survey\_questions$plot

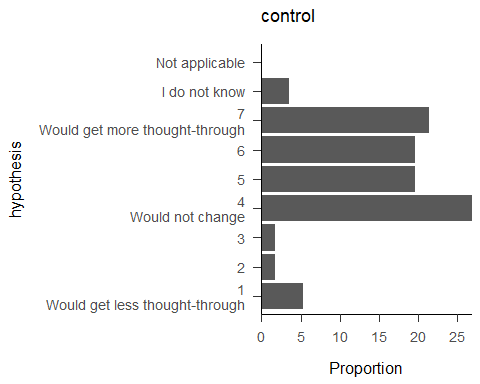
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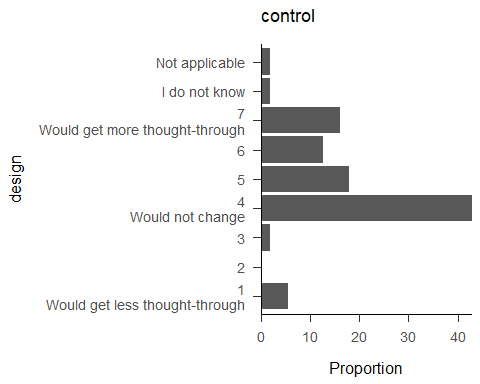
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## [[2]]



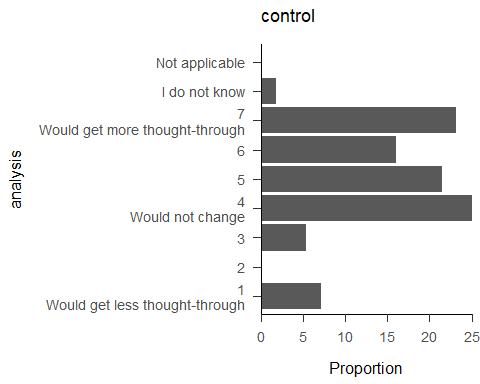
##   
## [[3]]



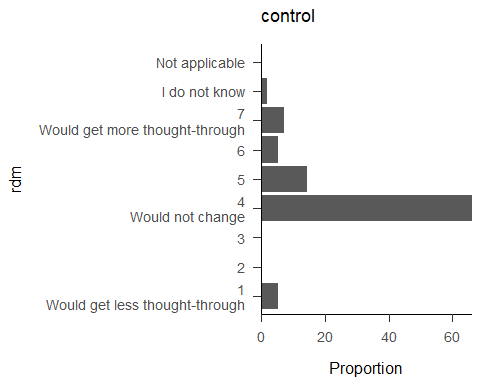
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## [[4]]



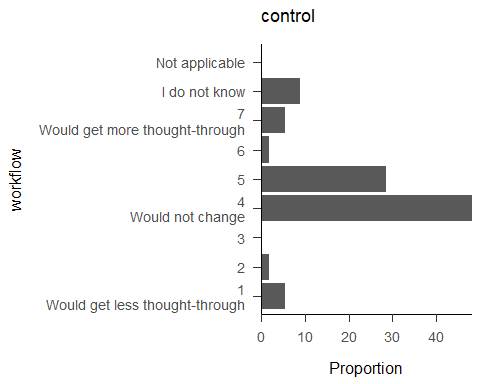
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## [[5]]



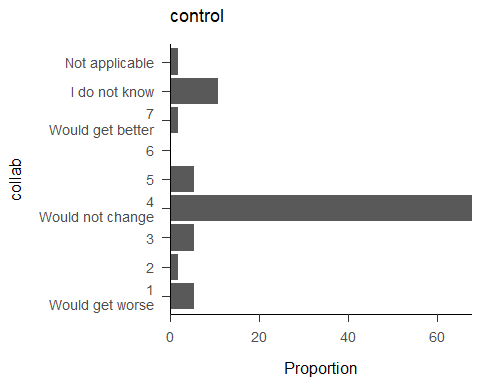
##   
## [[6]]



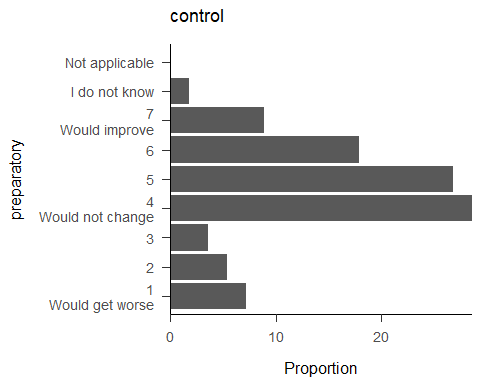
##   
## [[7]]



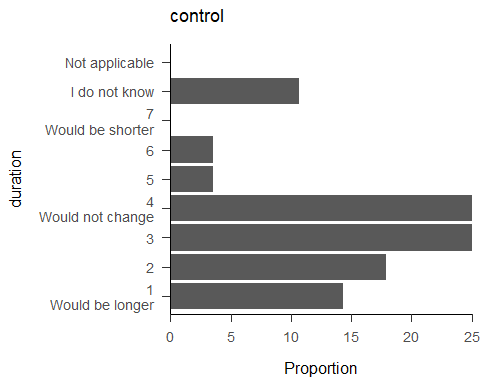
##   
## [[8]]



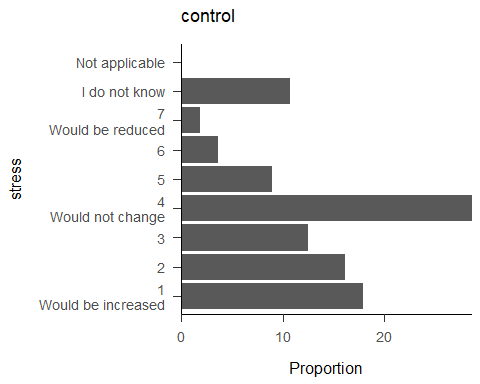
##   
## [[9]]



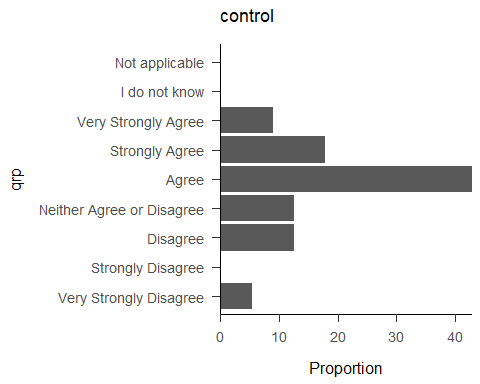
##   
## [[10]]



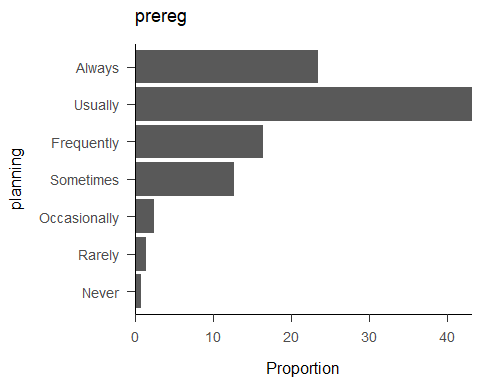
##   
## [[11]]



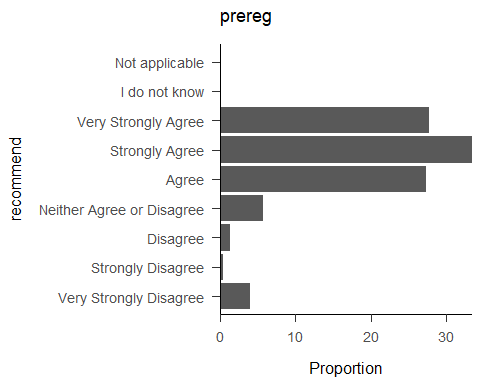
##   
## [[12]]



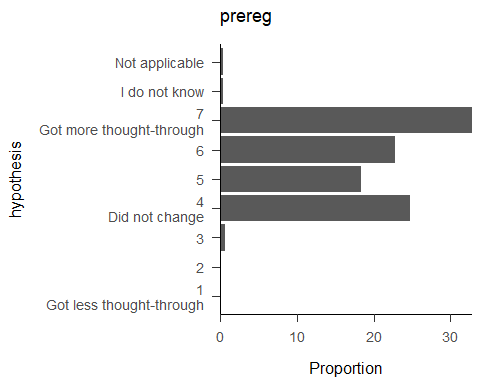
##   
## [[13]]



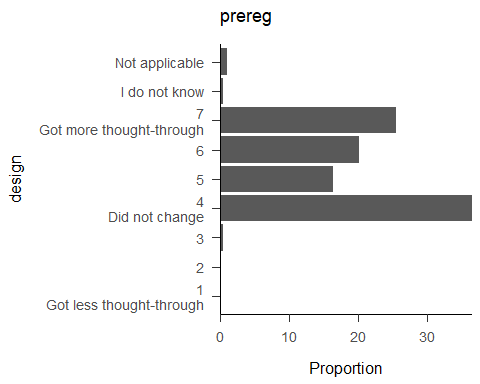
##   
## [[14]]



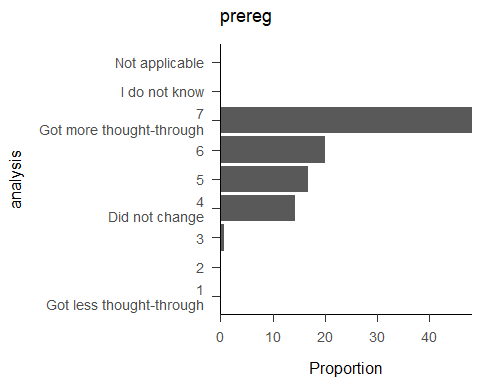
##   
## [[15]]



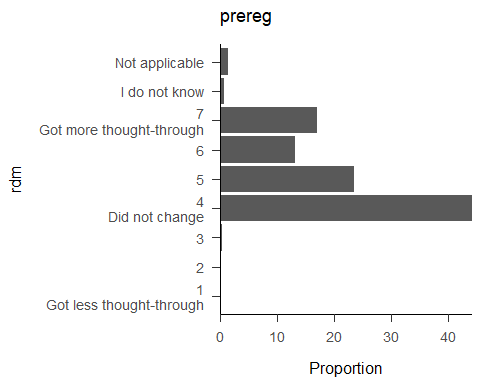
##   
## [[16]]



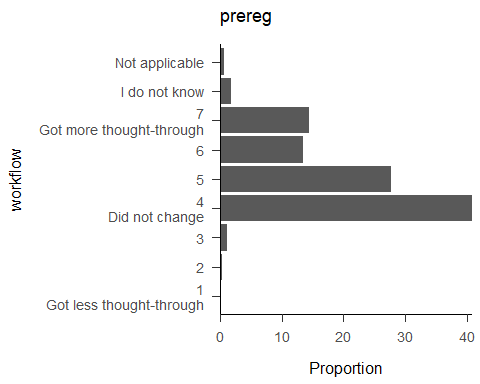
##   
## [[17]]



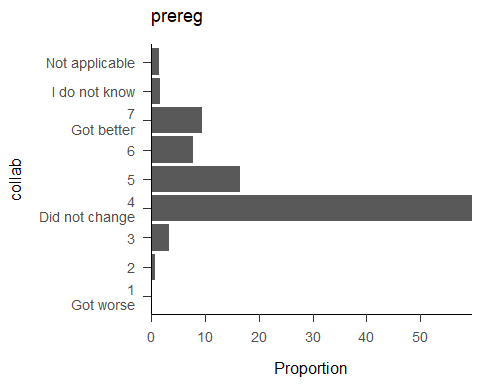
##   
## [[18]]



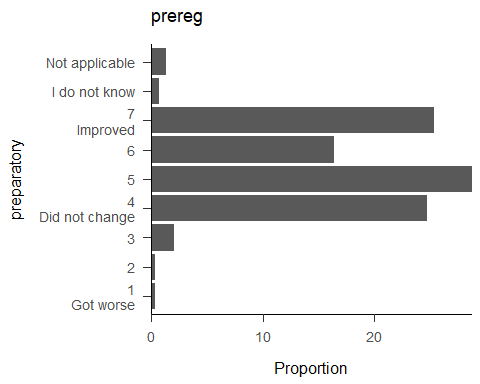
##   
## [[19]]



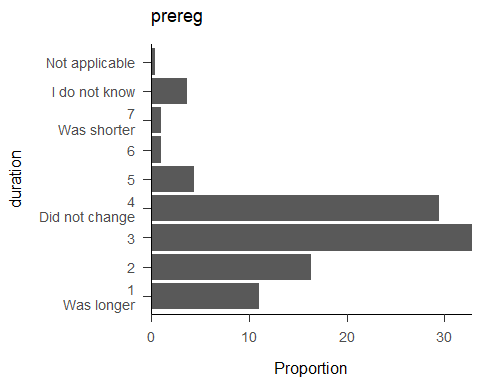
##   
## [[20]]



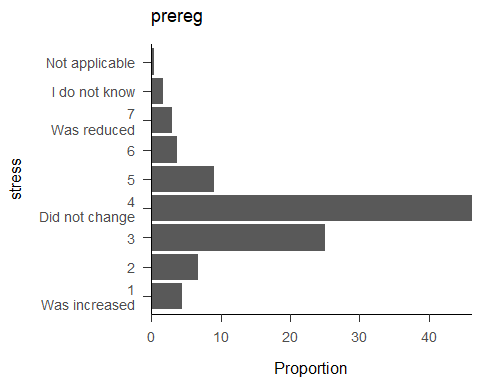
##   
## [[21]]



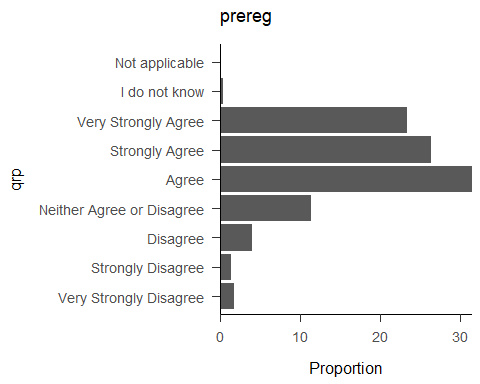
##   
## [[22]]



##   
## [[23]]



##   
## [[24]]

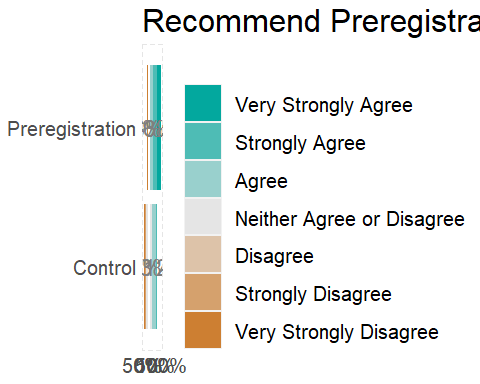


Three of the questions were using a Likert-scale. We show the proportion of the response levels as horizontal barcharts. Two of them using the same scale, therefore we show them together for practical reasons.

# Get the id of the questions  
likert\_plot\_var\_recommend <- "recommend"  
  
# Create the plot  
likert\_plot\_recommend <- likert\_plot\_odd(survey\_questions, likert\_plot\_var\_recommend, limits = c(-0.5, 1), text\_push = 0.01)

## `summarise()` regrouping output by 'vars', 'groups' (override with `.groups` argument)

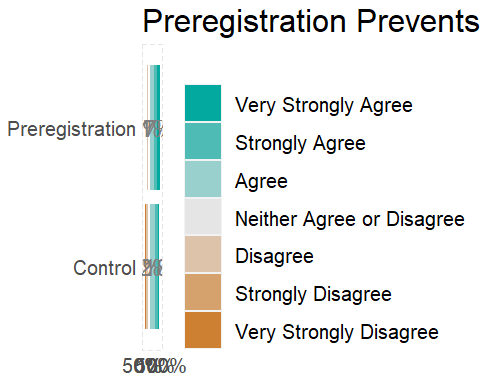
likert\_plot\_recommend



# Save for the paper  
ggsave("Figures/likert\_plot\_recommend.tiff", device = "tiff", plot = likert\_plot\_recommend, dpi = 300, width = 40, height = 10, units = "cm")  
  
ggsave("Figures/likert\_plot\_recommend.eps", device = "eps", plot = likert\_plot\_recommend, dpi = 300, width = 40, height = 10, units = "cm")  
  
# Save for the manuscript  
ggsave("Figures/likert\_plot\_recommend.png", device = "png", plot = likert\_plot\_recommend, dpi = 300, width = 40, height = 10, units = "cm")  
  
# Get the id of the questions  
likert\_plot\_var\_qrp <- "qrp"  
  
# Create the plot  
likert\_plot\_qrp <- likert\_plot\_odd(survey\_questions, likert\_plot\_var\_qrp, limits = c(-0.5, 1), text\_push = 0.02)

## `summarise()` regrouping output by 'vars', 'groups' (override with `.groups` argument)

likert\_plot\_qrp



# Save for the paper  
ggsave("Figures/likert\_plot\_qrp.tiff", device = "tiff", plot = likert\_plot\_qrp, dpi = 300, width = 40, height = 10, units = "cm")  
  
ggsave("Figures/likert\_plot\_qrp.eps", device = "eps", plot = likert\_plot\_qrp, dpi = 300, width = 40, height = 10, units = "cm")  
  
# Save for the manuscript  
ggsave("Figures/likert\_plot\_qrp.png", device = "png", plot = likert\_plot\_qrp, dpi = 300, width = 40, height = 10, units = "cm")

We show the last Likert-scale question with different scale separately.

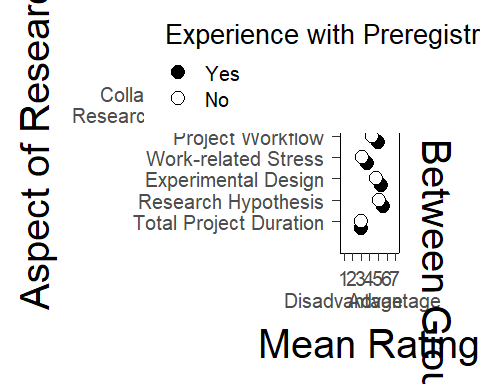
# Get the id of the questions  
likert\_plot\_var\_planning <- "planning"  
  
# Create the plot  
likert\_plot\_planning <- likert\_plot\_odd(survey\_questions, likert\_plot\_var\_planning, limits = c(-1, 1), text\_push = 0.02)

## `summarise()` regrouping output by 'vars', 'groups' (override with `.groups` argument)

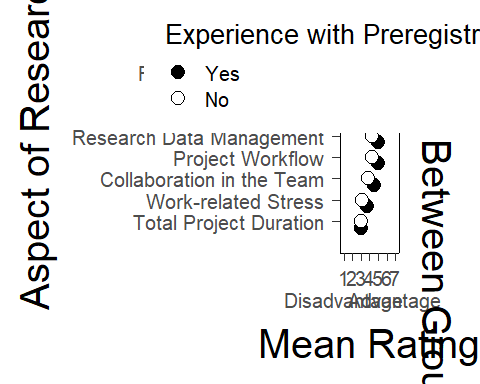
# Save for the paper  
ggsave("Figures/likert\_plot\_planning.tiff", device = "tiff", plot = likert\_plot\_planning, dpi = 300, width = 40, height = 10, units = "cm")  
  
ggsave("Figures/likert\_plot\_planning.eps", device = "eps", plot = likert\_plot\_planning, dpi = 300, width = 40, height = 10, units = "cm")  
  
# Save for the manuscript  
ggsave("Figures/likert\_plot\_planning.png", device = "png", plot = likert\_plot\_planning, dpi = 300, width = 40, height = 10, units = "cm")

The other questions were using a 7 point scale that we will treat as an interval scale. This plot presents the mean rating per question per group with the 95% CI as the errorbar.

## axis not allowed to touch  
## dots instead of cubes  
## everything in title case  
## jitter scatter and bar  
## this basic  
  
# Get the id of the questions  
interval\_plot\_vars <- c("hypothesis", "design", "analysis", "rdm", "workflow", "collab", "preparatory", "duration", "stress")  
  
# Modify the data for plotting  
interval\_plot\_data <-   
 processed %>%  
 select(response\_id, group, all\_of(interval\_plot\_vars)) %>%  
 pivot\_longer(  
 all\_of(interval\_plot\_vars),  
 names\_to = "vars",  
 values\_to = "values") %>%   
 filter(values != "I do not know",  
 values != "Not applicable") %>%   
 mutate(values = as.integer(str\_extract(values, "[0-9]{1,2}")),   
 vars = vars\_rename(vars)) %>%   
 group\_by(group, vars) %>%   
 summarise(mean = mean(values, na.rm = TRUE),  
 sd = sd(values, na.rm = TRUE),  
 n = n()) %>%   
 pivot\_wider(names\_from = group, values\_from = c(mean, sd, n)) %>%   
 mutate(mean\_difference = mean\_prereg - mean\_control) %>%   
 pivot\_longer(  
 union(contains("prereg"), contains("control")),  
 names\_to = c("variables", "groups"),  
 values\_to = "values",  
 names\_sep = "\_") %>%   
 pivot\_wider(  
 names\_from = variables,  
 values\_from = values) %>%   
 mutate(se = sd / sqrt(n),  
 ub = mean + 1.96 \* se,  
 lb = mean - 1.96 \* se,  
 groups = case\_when(groups == "control" ~ "No",  
 groups == "prereg" ~ "Yes"),  
 vars = as.factor(vars),  
 vars = fct\_reorder(vars, mean\_difference))  
  
# Create the plot  
interval\_plot <-  
 interval\_plot\_data %>%  
 ggplot() +  
 aes(x = as.integer(vars),  
 y = mean,  
 fill = groups,  
 group = groups) +  
 # Set error bars  
 ## Error bar for prereg group with nudged position  
 geom\_errorbar(  
 data = pick(groups == "Yes"),  
 aes(  
 ymin = mean - (se \* 1.96),  
 ymax = mean + (se \* 1.96)),  
 width = .3,  
 linetype = "dotted",  
 position = position\_nudge(x = -0.3, y = 0)) +  
 ## Error bar for control group without nudged position  
 geom\_errorbar(  
 data = pick(groups == "No"),  
 aes(  
 ymin = mean - (se \* 1.96),  
 ymax = mean + (se \* 1.96)),  
 width = .3,  
 linetype = "dotted") +  
 # Set points  
 ## Points of prereg group with nudged position  
 geom\_point(  
 data = pick(groups == "Yes"),  
 size = 4.5,  
 shape = 21,  
 position = position\_nudge(x = -0.3, y = 0)) +  
 ## Points of control group without nudged position  
 geom\_point(  
 data = pick(groups == "No"),  
 size = 4.5,  
 shape = 21) +  
 geom\_text(  
 aes(  
 x = as.integer(vars),  
 y = 7,  
 label = round(mean\_difference, 2)),  
 inherit.aes = FALSE,  
 size = 6,  
 hjust = -.65) +  
 scale\_fill\_manual(values = c("white", "black")) +  
 scale\_x\_continuous(  
 breaks = as.integer(unique(interval\_plot\_data$vars)),  
 labels = unique(interval\_plot\_data$vars),  
 sec.axis = sec\_axis(~ ., name = "Mean Difference Between Groups")) +  
 scale\_y\_continuous(  
 expand = c(0, 0.4),  
 breaks = c(1, 2, 3, 4, 5, 6, 7),  
 labels = c("1\nDisadvantage", "2", "3", "4", "5", "6", "7\nAdvantage")) +  
 coord\_flip(ylim = c(1, 7)) +  
 labs(x = "Aspect of Research",  
 y = "Mean Rating",  
 fill = "Experience with Preregistration") +  
 guides(fill = guide\_legend(reverse = TRUE)) +  
 papaja::theme\_apa() +  
 # themeJasp()  
 theme(axis.title = element\_text(size = 30),  
 axis.text.y.right = element\_blank(),  
 axis.ticks.y.right = element\_blank(),  
 axis.text = element\_text(size = 15),  
 legend.text = element\_text(size = 15),  
 legend.title = element\_text(size = 20),  
 legend.position = c(.2, .8),  
 plot.margin = unit(c(.5, .5, .5, .5), "cm"))  
   
  
interval\_plot



# Save for the paper  
ggsave("Figures/interval\_plot.tiff", device = "tiff", plot = interval\_plot, dpi = 300, width = 45, height = 25, units = "cm")  
  
ggsave("Figures/interval\_plot.eps", device = "eps", plot = interval\_plot, dpi = 300, width = 45, height = 25, units = "cm")  
  
# Save for the manuscript  
ggsave("Figures/interval\_plot.png", device = "png", plot = interval\_plot, dpi = 300, width = 45, height = 25, units = "cm")  
  
## Second version order based on the mean rating of the groups  
# Modify the data for plotting  
interval\_plot\_data\_second <-   
 processed %>%  
 select(response\_id, group, all\_of(interval\_plot\_vars)) %>%  
 pivot\_longer(  
 all\_of(interval\_plot\_vars),  
 names\_to = "vars",  
 values\_to = "values") %>%   
 filter(values != "I do not know",  
 values != "Not applicable") %>%   
 mutate(values = as.integer(str\_extract(values, "[0-9]{1,2}")),   
 vars = vars\_rename(vars)) %>%   
 group\_by(group, vars) %>%   
 summarise(mean = mean(values, na.rm = TRUE),  
 sd = sd(values, na.rm = TRUE),  
 n = n()) %>%   
 group\_by(vars) %>%   
 mutate(mean\_avg = mean(mean)) %>%   
 ungroup() %>%   
 pivot\_wider(names\_from = group, values\_from = c(mean, sd, n)) %>%  
 mutate(mean\_difference = mean\_prereg - mean\_control) %>%   
 pivot\_longer(  
 union(contains("prereg"), contains("control")),  
 names\_to = c("variables", "groups"),  
 values\_to = "values",  
 names\_sep = "\_") %>%   
 pivot\_wider(  
 names\_from = variables,  
 values\_from = values) %>%   
 mutate(se = sd / sqrt(n),  
 ub = mean + 1.96 \* se,  
 lb = mean - 1.96 \* se,  
 groups = case\_when(groups == "control" ~ "No",  
 groups == "prereg" ~ "Yes"),  
 vars = as.factor(vars),  
 vars = fct\_reorder(vars, mean\_avg))  
  
# Create the plot  
interval\_plot\_second <-  
 interval\_plot\_data\_second %>%  
 ggplot() +  
 aes(x = as.integer(vars),  
 y = mean,  
 fill = groups,  
 group = groups) +  
 # Set error bars  
 ## Error bar for prereg group with nudged position  
 geom\_errorbar(  
 data = pick(groups == "Yes"),  
 aes(  
 ymin = mean - (se \* 1.96),  
 ymax = mean + (se \* 1.96)),  
 width = .3,  
 linetype = "dotted",  
 position = position\_nudge(x = -0.3, y = 0)) +  
 ## Error bar for control group without nudged position  
 geom\_errorbar(  
 data = pick(groups == "No"),  
 aes(  
 ymin = mean - (se \* 1.96),  
 ymax = mean + (se \* 1.96)),  
 width = .3,  
 linetype = "dotted") +  
 # Set points  
 ## Points of prereg group with nudged position  
 geom\_point(  
 data = pick(groups == "Yes"),  
 size = 4.5,  
 shape = 21,  
 position = position\_nudge(x = -0.3, y = 0)) +  
 ## Points of control group without nudged position  
 geom\_point(  
 data = pick(groups == "No"),  
 size = 4.5,  
 shape = 21) +  
 geom\_text(  
 aes(  
 x = as.integer(vars),  
 y = 7,  
 label = round(mean\_difference, 2)),  
 inherit.aes = FALSE,  
 size = 6,  
 hjust = -.65) +  
 scale\_fill\_manual(values = c("white", "black")) +  
 scale\_x\_continuous(  
 breaks = as.integer(unique(interval\_plot\_data\_second$vars)),  
 labels = unique(interval\_plot\_data\_second$vars),  
 sec.axis = sec\_axis(~ ., name = "Mean Difference Between Groups")) +  
 scale\_y\_continuous(  
 expand = c(0, 0.4),  
 breaks = c(1, 2, 3, 4, 5, 6, 7),  
 labels = c("1\nDisadvantage", "2", "3", "4", "5", "6", "7\nAdvantage")) +  
 coord\_flip(ylim = c(1, 7)) +  
 labs(x = "Aspect of Research",  
 y = "Mean Rating",  
 fill = "Experience with Preregistration") +  
 guides(fill = guide\_legend(reverse = TRUE)) +  
 papaja::theme\_apa() +  
 theme(axis.title = element\_text(size = 30),  
 axis.text.y.right = element\_blank(),  
 axis.ticks.y.right = element\_blank(),  
 axis.text = element\_text(size = 15),  
 legend.text = element\_text(size = 15),  
 legend.title = element\_text(size = 20),  
 legend.position = c(.2, .8),  
 plot.margin = unit(c(.5, .5, .5, .5), "cm"))  
   
interval\_plot\_second



# Save for the paper  
ggsave("Figures/interval\_plot\_second.tiff", device = "tiff", plot = interval\_plot\_second, dpi = 300, width = 45, height = 25, units = "cm")  
  
ggsave("Figures/interval\_plot\_second.eps", device = "eps", plot = interval\_plot\_second, dpi = 300, width = 45, height = 25, units = "cm")  
  
# Save for the manuscript  
ggsave("Figures/interval\_plot\_second.png", device = "png", plot = interval\_plot\_second, dpi = 300, width = 45, height = 25, units = "cm")

# Responses by research type group for all survey questions

## Data preprocessing

Participants indicated their main research type. According to the preregistration we group their responses to compare the results of researchers who primarily do testing and researchers who primarily do another kind of research.

distinct(processed, research\_type)

## # A tibble: 6 x 1  
## research\_type   
## <chr>   
## 1 Hypothesis testing   
## 2 Other   
## 3 Estimation   
## 4 Modeling   
## 5 Qualitative research  
## 6 Simulations

processed <-   
 processed %>%   
 mutate(research\_type\_group = case\_when(research\_type == "Hypothesis testing" ~ "testing",  
 research\_type %in% c("Other", "Estimation", "Modeling", "Qualitative research", "Simulations") ~ "else"))  
  
processed %>%   
 group\_by(group, research\_type\_group) %>%   
 summarise(n = n())

## `summarise()` regrouping output by 'group' (override with `.groups` argument)

## # A tibble: 4 x 3  
## # Groups: group [2]  
## group research\_type\_group n  
## <chr> <chr> <int>  
## 1 control else 15  
## 2 control testing 41  
## 3 prereg else 49  
## 4 prereg testing 250

There is not enough participant in the “control” group to make the comparison based on the preregistration of our study. At least 30 respondents need to be in a group to make the comparison.

Therefore, we only run the comparison for the “prereg” group. We keep only these responses for this analysis.

research\_type\_data <-  
 processed %>%   
 filter(group == "prereg")

Save the group names of interest.

research\_type\_groups <- c("testing", "else")

List all the questions for each group.

research\_type\_questions <-  
 expand\_grid(groups = research\_type\_groups,  
 vars = vars)

Get the levels of each question per group.

research\_type\_questions <-  
 research\_type\_questions %>%   
 mutate(var\_level\_present = purrr::map2(groups, vars,  
 ~ level\_present(  
 df = research\_type\_data,  
 group\_name = .x,  
 var\_name = .y,  
 factor\_group = "prereg",  
 group\_var = research\_type\_group)),  
 var\_level\_labels = purrr::map2(groups, vars,  
 ~ get\_levels(  
 df = research\_type\_data,  
 group\_name = .x,  
 var\_name = .y,  
 factor\_group = "prereg",  
 group\_var = research\_type\_group)))

Count the number of responses for each level

research\_type\_questions <-  
 research\_type\_questions %>%   
 mutate(var\_desc = purrr::map2(groups, vars,  
 ~ level\_count(  
 df = research\_type\_data,  
 group\_name = .x,  
 var\_name = .y,  
 group\_var = research\_type\_group,  
 factor\_group = "prereg")))

Create one table out of nested information with more descriptive variable and question names.

research\_type\_questions\_table <-   
 research\_type\_questions %>%   
 select(groups, vars, var\_desc) %>%   
 unnest(var\_desc) %>%   
 dplyr::group\_by(groups, vars) %>%   
 dplyr::mutate(N = sum(n),  
 prop = round(n / N \* 100, 2)) %>%   
 select(-N, -levels\_int) %>%   
 mutate(vars = vars\_rename(vars)) %>%   
 arrange(vars, groups) %>%   
 rename(`Survey question` = vars,  
 Group = groups,  
 Levels = levels,  
 `Number of responses` = n,  
 `Proportion of the level` = prop)

Create an APA formatted table for the paper.

papaja::apa\_table(  
 research\_type\_questions\_table,  
 caption = "A Full Summary of All Survey Questions Per Research Type for Preregistration Group",  
 escape = TRUE  
)

(#tab:unnamed-chunk-22)

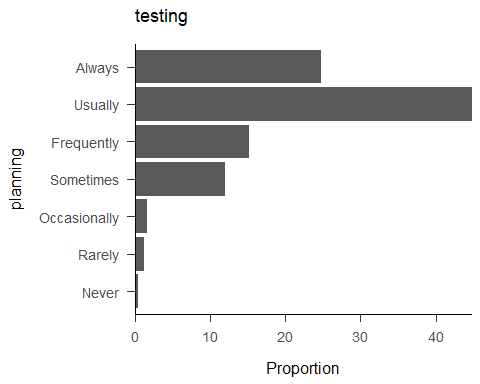
*A Full Summary of All Survey Questions Per Research Type for Preregistration Group*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Group | Survey question | Levels | Number of responses | Proportion of the level |
| else | Analysis Plan | 1 |  |  |
| Got less t | hought-through 0.00 0.00 |  |  |  |
| else | Analysis Plan | 2 | 0.00 | 0.00 |
| else | Analysis Plan | 3 | 0.00 | 0.00 |
| else | Analysis Plan | 4 |  |  |
| Did not ch | ange 10.00 20.41 |  |  |  |
| else | Analysis Plan | 5 | 4.00 | 8.16 |
| else | Analysis Plan | 6 | 8.00 | 16.33 |
| else | Analysis Plan | 7 |  |  |
| Got more t | hought-through 27.00 55.10 |  |  |  |
| else | Analysis Plan | I do not know | 0.00 | 0.00 |
| else | Analysis Plan | Not applicable | 0.00 | 0.00 |
| testing | Analysis Plan | 1 |  |  |
| Got less t | hought-through 0.00 0.00 |  |  |  |
| testing | Analysis Plan | 2 | 0.00 | 0.00 |
| testing | Analysis Plan | 3 | 2.00 | 0.80 |
| testing | Analysis Plan | 4 |  |  |
| Did not ch | ange 33.00 13.20 |  |  |  |
| testing | Analysis Plan | 5 | 46.00 | 18.40 |
| testing | Analysis Plan | 6 | 52.00 | 20.80 |
| testing | Analysis Plan | 7 |  |  |
| Got more t | hought-through 117.00 46.80 |  |  |  |
| testing | Analysis Plan | I do not know | 0.00 | 0.00 |
| testing | Analysis Plan | Not applicable | 0.00 | 0.00 |
| else | Collaboration in the Team | 1 |  |  |
| Got worse | 0.00 0.00 |  |  |  |
| else | Collaboration in the Team | 2 | 0.00 | 0.00 |
| else | Collaboration in the Team | 3 | 1.00 | 2.04 |
| else | Collaboration in the Team | 4 |  |  |
| Did not ch | ange 28.00 57.14 |  |  |  |
| else | Collaboration in the Team | 5 | 7.00 | 14.29 |
| else | Collaboration in the Team | 6 | 4.00 | 8.16 |
| else | Collaboration in the Team | 7 |  |  |
| Got better | 6.00 12.24 |  |  |  |
| else | Collaboration in the Team | I do not know | 0.00 | 0.00 |
| else | Collaboration in the Team | Not applicable | 3.00 | 6.12 |
| testing | Collaboration in the Team | 1 |  |  |
| Got worse | 0.00 0.00 |  |  |  |
| testing | Collaboration in the Team | 2 | 2.00 | 0.80 |
| testing | Collaboration in the Team | 3 | 9.00 | 3.60 |
| testing | Collaboration in the Team | 4 |  |  |
| Did not ch | ange 150.00 60.00 |  |  |  |
| testing | Collaboration in the Team | 5 | 42.00 | 16.80 |
| testing | Collaboration in the Team | 6 | 19.00 | 7.60 |
| testing | Collaboration in the Team | 7 |  |  |
| Got better | 22.00 8.80 |  |  |  |
| testing | Collaboration in the Team | I do not know | 5.00 | 2.00 |
| testing | Collaboration in the Team | Not applicable | 1.00 | 0.40 |
| else | Consider Preregistration in Future Work | Never | 1.00 | 2.04 |
| else | Consider Preregistration in Future Work | Rarely | 1.00 | 2.04 |
| else | Consider Preregistration in Future Work | Occasionally | 3.00 | 6.12 |
| else | Consider Preregistration in Future Work | Sometimes | 8.00 | 16.33 |
| else | Consider Preregistration in Future Work | Frequently | 11.00 | 22.45 |
| else | Consider Preregistration in Future Work | Usually | 17.00 | 34.69 |
| else | Consider Preregistration in Future Work | Always | 8.00 | 16.33 |
| testing | Consider Preregistration in Future Work | Never | 1.00 | 0.40 |
| testing | Consider Preregistration in Future Work | Rarely | 3.00 | 1.20 |
| testing | Consider Preregistration in Future Work | Occasionally | 4.00 | 1.60 |
| testing | Consider Preregistration in Future Work | Sometimes | 30.00 | 12.00 |
| testing | Consider Preregistration in Future Work | Frequently | 38.00 | 15.20 |
| testing | Consider Preregistration in Future Work | Usually | 112.00 | 44.80 |
| testing | Consider Preregistration in Future Work | Always | 62.00 | 24.80 |
| else | Experimental Design | 1 |  |  |
| Got less t | hought-through 0.00 0.00 |  |  |  |
| else | Experimental Design | 2 | 0.00 | 0.00 |
| else | Experimental Design | 3 | 0.00 | 0.00 |
| else | Experimental Design | 4 |  |  |
| Did not ch | ange 21.00 42.86 |  |  |  |
| else | Experimental Design | 5 | 5.00 | 10.20 |
| else | Experimental Design | 6 | 7.00 | 14.29 |
| else | Experimental Design | 7 |  |  |
| Got more t | hought-through 15.00 30.61 |  |  |  |
| else | Experimental Design | I do not know | 0.00 | 0.00 |
| else | Experimental Design | Not applicable | 1.00 | 2.04 |
| testing | Experimental Design | 1 |  |  |
| Got less t | hought-through 0.00 0.00 |  |  |  |
| testing | Experimental Design | 2 | 0.00 | 0.00 |
| testing | Experimental Design | 3 | 1.00 | 0.40 |
| testing | Experimental Design | 4 |  |  |
| Did not ch | ange 88.00 35.20 |  |  |  |
| testing | Experimental Design | 5 | 44.00 | 17.60 |
| testing | Experimental Design | 6 | 53.00 | 21.20 |
| testing | Experimental Design | 7 |  |  |
| Got more t | hought-through 61.00 24.40 |  |  |  |
| testing | Experimental Design | I do not know | 1.00 | 0.40 |
| testing | Experimental Design | Not applicable | 2.00 | 0.80 |
| else | Preparatory Work | 1 |  |  |
| Got worse | 0.00 0.00 |  |  |  |
| else | Preparatory Work | 2 | 0.00 | 0.00 |
| else | Preparatory Work | 3 | 0.00 | 0.00 |
| else | Preparatory Work | 4 |  |  |
| Did not ch | ange 14.00 28.57 |  |  |  |
| else | Preparatory Work | 5 | 12.00 | 24.49 |
| else | Preparatory Work | 6 | 8.00 | 16.33 |
| else | Preparatory Work | 7 |  |  |
| Improved | 13.00 26.53 |  |  |  |
| else | Preparatory Work | I do not know | 0.00 | 0.00 |
| else | Preparatory Work | Not applicable | 2.00 | 4.08 |
| testing | Preparatory Work | 1 |  |  |
| Got worse | 1.00 0.40 |  |  |  |
| testing | Preparatory Work | 2 | 1.00 | 0.40 |
| testing | Preparatory Work | 3 | 6.00 | 2.40 |
| testing | Preparatory Work | 4 |  |  |
| Did not ch | ange 60.00 24.00 |  |  |  |
| testing | Preparatory Work | 5 | 74.00 | 29.60 |
| testing | Preparatory Work | 6 | 41.00 | 16.40 |
| testing | Preparatory Work | 7 |  |  |
| Improved | 63.00 25.20 |  |  |  |
| testing | Preparatory Work | I do not know | 2.00 | 0.80 |
| testing | Preparatory Work | Not applicable | 2.00 | 0.80 |
| else | Preregistration Prevents Questionable Research Practices | Very Strongly Disagree | 0.00 | 0.00 |
| else | Preregistration Prevents Questionable Research Practices | Strongly Disagree | 0.00 | 0.00 |
| else | Preregistration Prevents Questionable Research Practices | Disagree | 3.00 | 6.12 |
| else | Preregistration Prevents Questionable Research Practices | Neither Agree or Disagree | 8.00 | 16.33 |
| else | Preregistration Prevents Questionable Research Practices | Agree | 17.00 | 34.69 |
| else | Preregistration Prevents Questionable Research Practices | Strongly Agree | 13.00 | 26.53 |
| else | Preregistration Prevents Questionable Research Practices | Very Strongly Agree | 8.00 | 16.33 |
| else | Preregistration Prevents Questionable Research Practices | I do not know | 0.00 | 0.00 |
| else | Preregistration Prevents Questionable Research Practices | Not applicable | 0.00 | 0.00 |
| testing | Preregistration Prevents Questionable Research Practices | Very Strongly Disagree | 5.00 | 2.00 |
| testing | Preregistration Prevents Questionable Research Practices | Strongly Disagree | 4.00 | 1.60 |
| testing | Preregistration Prevents Questionable Research Practices | Disagree | 9.00 | 3.60 |
| testing | Preregistration Prevents Questionable Research Practices | Neither Agree or Disagree | 26.00 | 10.40 |
| testing | Preregistration Prevents Questionable Research Practices | Agree | 77.00 | 30.80 |
| testing | Preregistration Prevents Questionable Research Practices | Strongly Agree | 66.00 | 26.40 |
| testing | Preregistration Prevents Questionable Research Practices | Very Strongly Agree | 62.00 | 24.80 |
| testing | Preregistration Prevents Questionable Research Practices | I do not know | 1.00 | 0.40 |
| testing | Preregistration Prevents Questionable Research Practices | Not applicable | 0.00 | 0.00 |
| else | Project Workflow | 1 |  |  |
| Got less t | hought-through 0.00 0.00 |  |  |  |
| else | Project Workflow | 2 | 0.00 | 0.00 |
| else | Project Workflow | 3 | 0.00 | 0.00 |
| else | Project Workflow | 4 |  |  |
| Did not ch | ange 21.00 42.86 |  |  |  |
| else | Project Workflow | 5 | 12.00 | 24.49 |
| else | Project Workflow | 6 | 4.00 | 8.16 |
| else | Project Workflow | 7 |  |  |
| Got more t | hought-through 12.00 24.49 |  |  |  |
| else | Project Workflow | I do not know | 0.00 | 0.00 |
| else | Project Workflow | Not applicable | 0.00 | 0.00 |
| testing | Project Workflow | 1 |  |  |
| Got less t | hought-through 0.00 0.00 |  |  |  |
| testing | Project Workflow | 2 | 1.00 | 0.40 |
| testing | Project Workflow | 3 | 3.00 | 1.20 |
| testing | Project Workflow | 4 |  |  |
| Did not ch | ange 101.00 40.40 |  |  |  |
| testing | Project Workflow | 5 | 71.00 | 28.40 |
| testing | Project Workflow | 6 | 36.00 | 14.40 |
| testing | Project Workflow | 7 |  |  |
| Got more t | hought-through 31.00 12.40 |  |  |  |
| testing | Project Workflow | I do not know | 5.00 | 2.00 |
| testing | Project Workflow | Not applicable | 2.00 | 0.80 |
| else | Recommend Preregistration To Colleagues | Very Strongly Disagree | 0.00 | 0.00 |
| else | Recommend Preregistration To Colleagues | Strongly Disagree | 1.00 | 2.04 |
| else | Recommend Preregistration To Colleagues | Disagree | 1.00 | 2.04 |
| else | Recommend Preregistration To Colleagues | Neither Agree or Disagree | 5.00 | 10.20 |
| else | Recommend Preregistration To Colleagues | Agree | 18.00 | 36.73 |
| else | Recommend Preregistration To Colleagues | Strongly Agree | 9.00 | 18.37 |
| else | Recommend Preregistration To Colleagues | Very Strongly Agree | 15.00 | 30.61 |
| else | Recommend Preregistration To Colleagues | I do not know | 0.00 | 0.00 |
| else | Recommend Preregistration To Colleagues | Not applicable | 0.00 | 0.00 |
| testing | Recommend Preregistration To Colleagues | Very Strongly Disagree | 12.00 | 4.80 |
| testing | Recommend Preregistration To Colleagues | Strongly Disagree | 0.00 | 0.00 |
| testing | Recommend Preregistration To Colleagues | Disagree | 3.00 | 1.20 |
| testing | Recommend Preregistration To Colleagues | Neither Agree or Disagree | 12.00 | 4.80 |
| testing | Recommend Preregistration To Colleagues | Agree | 64.00 | 25.60 |
| testing | Recommend Preregistration To Colleagues | Strongly Agree | 91.00 | 36.40 |
| testing | Recommend Preregistration To Colleagues | Very Strongly Agree | 68.00 | 27.20 |
| testing | Recommend Preregistration To Colleagues | I do not know | 0.00 | 0.00 |
| testing | Recommend Preregistration To Colleagues | Not applicable | 0.00 | 0.00 |
| else | Research Data Management | 1 |  |  |
| Got less t | hought-through 0.00 0.00 |  |  |  |
| else | Research Data Management | 2 | 0.00 | 0.00 |
| else | Research Data Management | 3 | 0.00 | 0.00 |
| else | Research Data Management | 4 |  |  |
| Did not ch | ange 24.00 48.98 |  |  |  |
| else | Research Data Management | 5 | 11.00 | 22.45 |
| else | Research Data Management | 6 | 4.00 | 8.16 |
| else | Research Data Management | 7 |  |  |
| Got more t | hought-through 8.00 16.33 |  |  |  |
| else | Research Data Management | I do not know | 0.00 | 0.00 |
| else | Research Data Management | Not applicable | 2.00 | 4.08 |
| testing | Research Data Management | 1 |  |  |
| Got less t | hought-through 0.00 0.00 |  |  |  |
| testing | Research Data Management | 2 | 0.00 | 0.00 |
| testing | Research Data Management | 3 | 1.00 | 0.40 |
| testing | Research Data Management | 4 |  |  |
| Did not ch | ange 108.00 43.20 |  |  |  |
| testing | Research Data Management | 5 | 59.00 | 23.60 |
| testing | Research Data Management | 6 | 35.00 | 14.00 |
| testing | Research Data Management | 7 |  |  |
| Got more t | hought-through 43.00 17.20 |  |  |  |
| testing | Research Data Management | I do not know | 2.00 | 0.80 |
| testing | Research Data Management | Not applicable | 2.00 | 0.80 |
| else | Research Hypothesis | 1 |  |  |
| Got less t | hought-through 0.00 0.00 |  |  |  |
| else | Research Hypothesis | 2 | 0.00 | 0.00 |
| else | Research Hypothesis | 3 | 0.00 | 0.00 |
| else | Research Hypothesis | 4 |  |  |
| Did not ch | ange 18.00 36.73 |  |  |  |
| else | Research Hypothesis | 5 | 5.00 | 10.20 |
| else | Research Hypothesis | 6 | 9.00 | 18.37 |
| else | Research Hypothesis | 7 |  |  |
| Got more t | hought-through 17.00 34.69 |  |  |  |
| else | Research Hypothesis | I do not know | 0.00 | 0.00 |
| else | Research Hypothesis | Not applicable | 0.00 | 0.00 |
| testing | Research Hypothesis | 1 |  |  |
| Got less t | hought-through 0.00 0.00 |  |  |  |
| testing | Research Hypothesis | 2 | 0.00 | 0.00 |
| testing | Research Hypothesis | 3 | 2.00 | 0.80 |
| testing | Research Hypothesis | 4 |  |  |
| Did not ch | ange 56.00 22.40 |  |  |  |
| testing | Research Hypothesis | 5 | 50.00 | 20.00 |
| testing | Research Hypothesis | 6 | 59.00 | 23.60 |
| testing | Research Hypothesis | 7 |  |  |
| Got more t | hought-through 81.00 32.40 |  |  |  |
| testing | Research Hypothesis | I do not know | 1.00 | 0.40 |
| testing | Research Hypothesis | Not applicable | 1.00 | 0.40 |
| else | Total Project Duration | 1 |  |  |
| Was longer | 3.00 6.12 |  |  |  |
| else | Total Project Duration | 2 | 7.00 | 14.29 |
| else | Total Project Duration | 3 | 17.00 | 34.69 |
| else | Total Project Duration | 4 |  |  |
| Did not ch | ange 15.00 30.61 |  |  |  |
| else | Total Project Duration | 5 | 1.00 | 2.04 |
| else | Total Project Duration | 6 | 1.00 | 2.04 |
| else | Total Project Duration | 7 |  |  |
| Was shorte | r 3.00 6.12 |  |  |  |
| else | Total Project Duration | I do not know | 1.00 | 2.04 |
| else | Total Project Duration | Not applicable | 1.00 | 2.04 |
| testing | Total Project Duration | 1 |  |  |
| Was longer | 30.00 12.00 |  |  |  |
| testing | Total Project Duration | 2 | 42.00 | 16.80 |
| testing | Total Project Duration | 3 | 81.00 | 32.40 |
| testing | Total Project Duration | 4 |  |  |
| Did not ch | ange 73.00 29.20 |  |  |  |
| testing | Total Project Duration | 5 | 12.00 | 4.80 |
| testing | Total Project Duration | 6 | 2.00 | 0.80 |
| testing | Total Project Duration | 7 |  |  |
| Was shorte | r 0.00 0.00 |  |  |  |
| testing | Total Project Duration | I do not know | 10.00 | 4.00 |
| testing | Total Project Duration | Not applicable | 0.00 | 0.00 |
| else | Work-related Stress | 1 |  |  |
| Was increa | sed 1.00 2.04 |  |  |  |
| else | Work-related Stress | 2 | 1.00 | 2.04 |
| else | Work-related Stress | 3 | 8.00 | 16.33 |
| else | Work-related Stress | 4 |  |  |
| Did not ch | ange 28.00 57.14 |  |  |  |
| else | Work-related Stress | 5 | 6.00 | 12.24 |
| else | Work-related Stress | 6 | 1.00 | 2.04 |
| else | Work-related Stress | 7 |  |  |
| Was reduce | d 3.00 6.12 |  |  |  |
| else | Work-related Stress | I do not know | 0.00 | 0.00 |
| else | Work-related Stress | Not applicable | 1.00 | 2.04 |
| testing | Work-related Stress | 1 |  |  |
| Was increa | sed 12.00 4.80 |  |  |  |
| testing | Work-related Stress | 2 | 19.00 | 7.60 |
| testing | Work-related Stress | 3 | 67.00 | 26.80 |
| testing | Work-related Stress | 4 |  |  |
| Did not ch | ange 110.00 44.00 |  |  |  |
| testing | Work-related Stress | 5 | 21.00 | 8.40 |
| testing | Work-related Stress | 6 | 10.00 | 4.00 |
| testing | Work-related Stress | 7 |  |  |
| Was reduce | d 6.00 2.40 |  |  |  |
| testing | Work-related Stress | I do not know | 5.00 | 2.00 |
| testing | Work-related Stress | Not applicable | 0.00 | 0.00 |

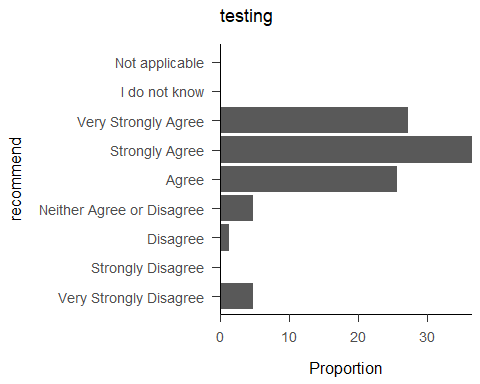
Visualize the content of the table to aid the creation of the plots for the paper.

research\_type\_questions <-  
 research\_type\_questions %>%   
 mutate(plot = map2(groups, vars,  
 ~ apa\_barplot(  
 df = research\_type\_data,  
 group\_name = .x,  
 var\_name = .y,  
 group\_var = research\_type\_group,  
 factor\_group = "prereg")))  
  
research\_type\_questions$plot

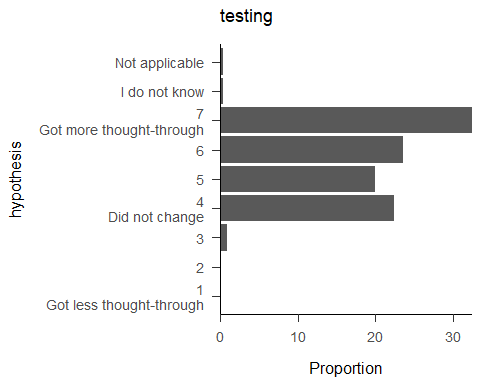
## [[1]]



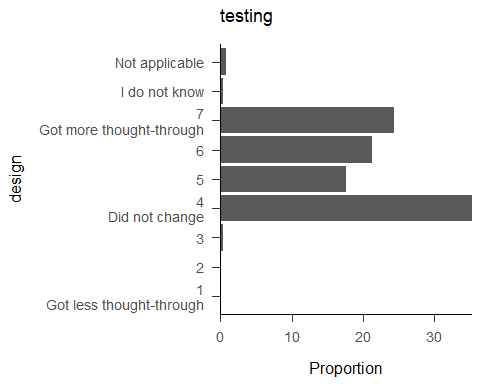
##   
## [[2]]



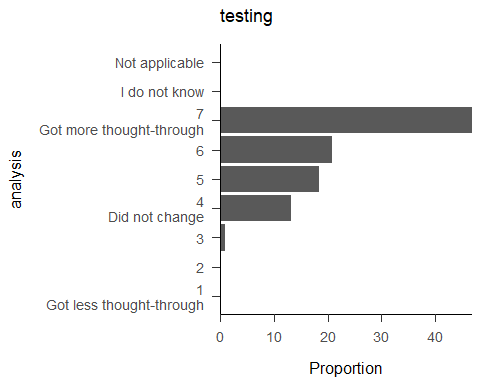
##   
## [[3]]



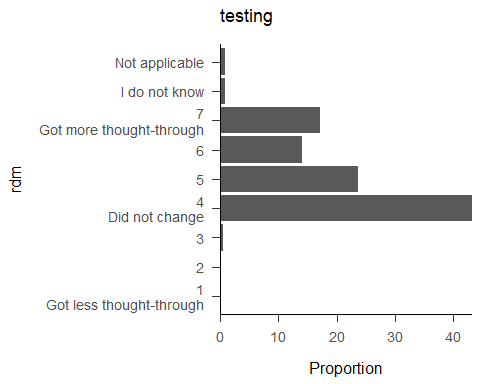
##   
## [[4]]



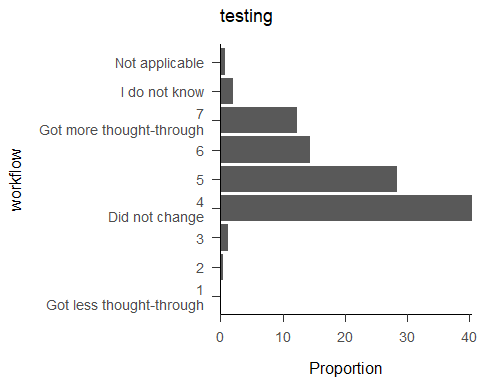
##   
## [[5]]



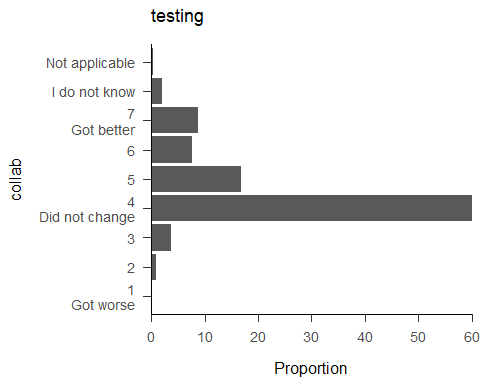
##   
## [[6]]



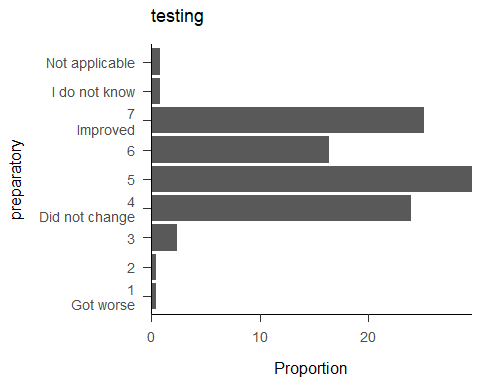
##   
## [[7]]



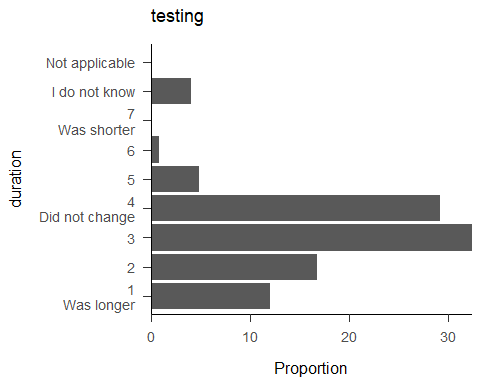
##   
## [[8]]



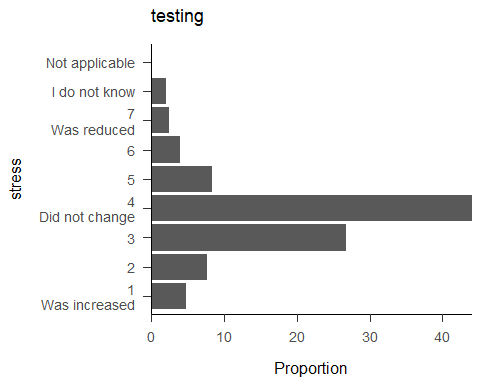
##   
## [[9]]



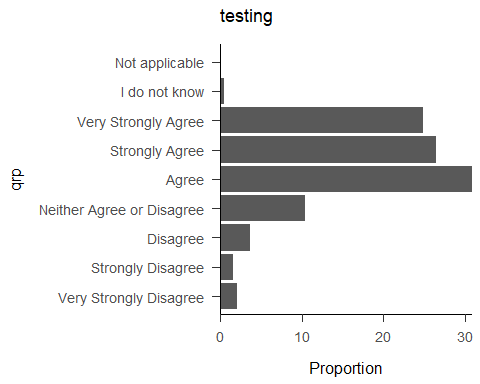
##   
## [[10]]



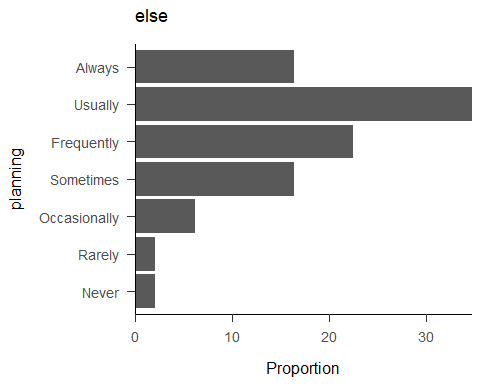
##   
## [[11]]



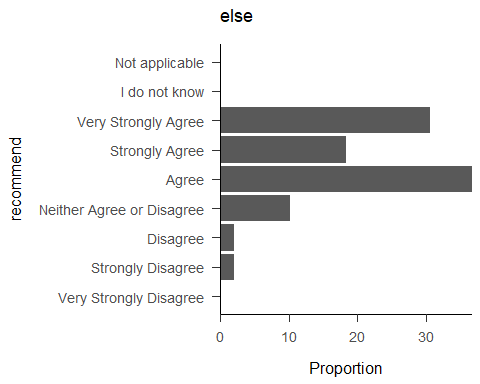
##   
## [[12]]



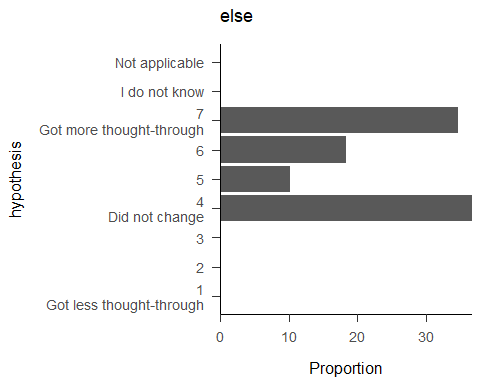
##   
## [[13]]



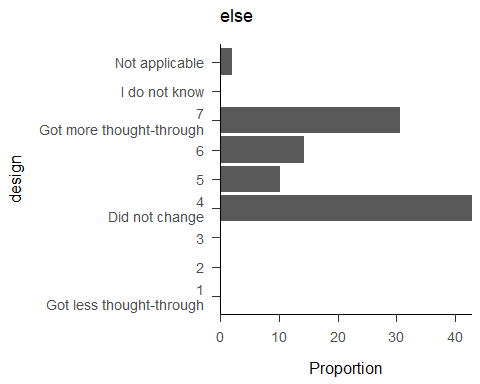
##   
## [[14]]



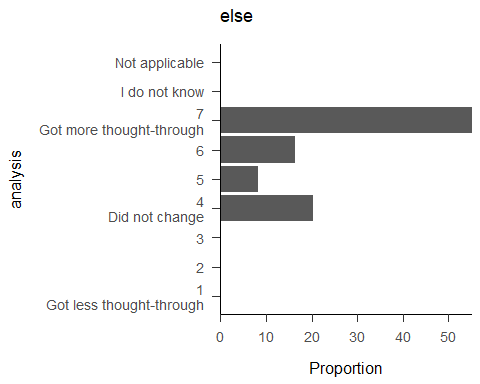
##   
## [[15]]



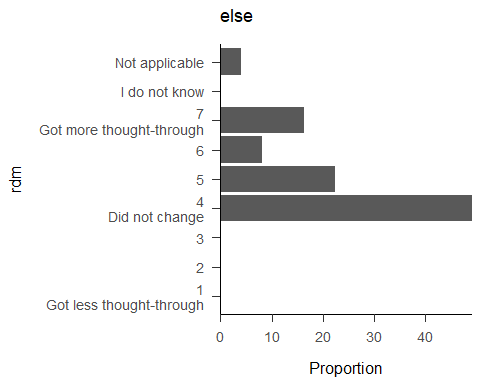
##   
## [[16]]



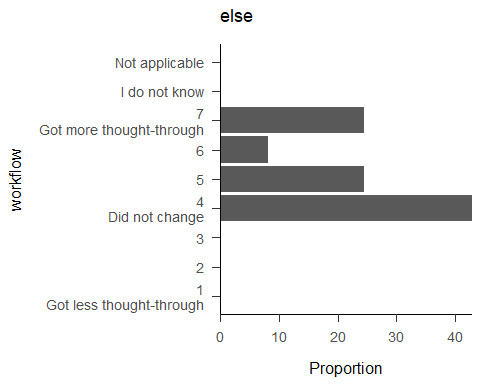
##   
## [[17]]



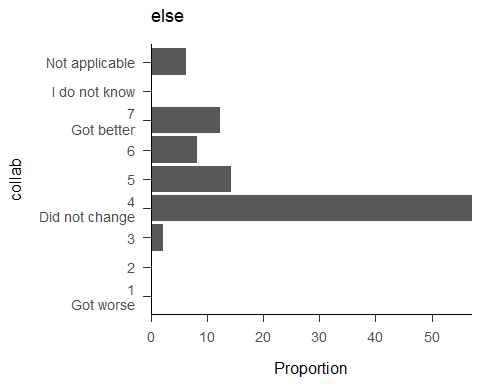
##   
## [[18]]



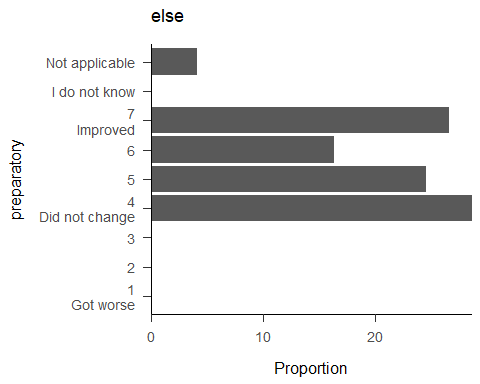
##   
## [[19]]



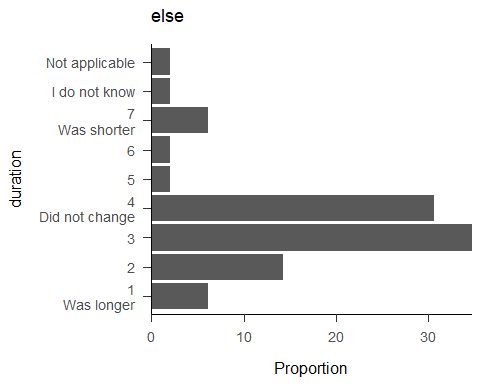
##   
## [[20]]



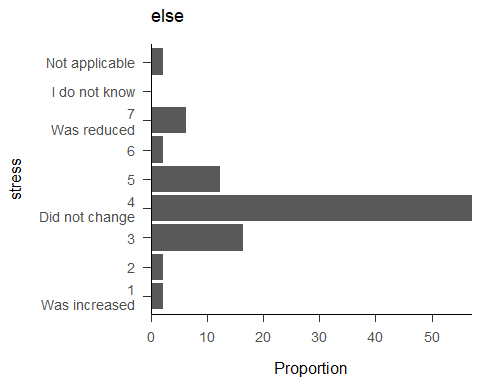
##   
## [[21]]



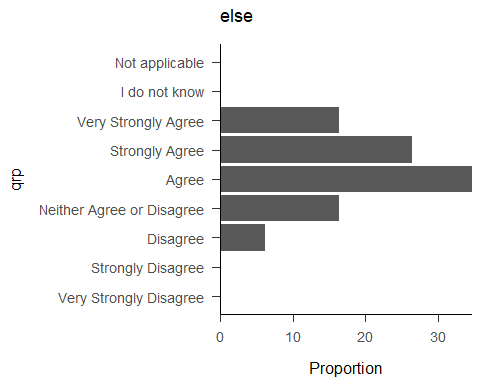
##   
## [[22]]



##   
## [[23]]



##   
## [[24]]



Creating plots for the Likert-type scales.

# Create the plot  
research\_type\_likert\_plot\_recommend <- likert\_plot\_odd(research\_type\_questions, likert\_plot\_var\_recommend, limits = c(-0.5, 1), text\_push = 0.02)

## `summarise()` regrouping output by 'vars', 'groups' (override with `.groups` argument)

# Save for the paper  
ggsave("Figures/research\_type\_likert\_plot\_recommend.tiff", device = "tiff", plot = research\_type\_likert\_plot\_recommend, dpi = 300, width = 40, height = 10, units = "cm")  
  
ggsave("Figures/research\_type\_likert\_plot\_recommend.eps", device = "eps", plot = research\_type\_likert\_plot\_recommend, dpi = 300, width = 40, height = 10, units = "cm")  
  
# Save for the manuscript  
ggsave("Figures/research\_type\_likert\_plot\_recommend.png", device = "png", plot = research\_type\_likert\_plot\_recommend, dpi = 300, width = 40, height = 10, units = "cm")

# Create the plot  
research\_type\_likert\_plot\_qrp <- likert\_plot\_odd(research\_type\_questions, likert\_plot\_var\_qrp, limits = c(-0.5, 1), text\_push = 0.02)

## `summarise()` regrouping output by 'vars', 'groups' (override with `.groups` argument)

# Save for the paper  
ggsave("Figures/research\_type\_likert\_plot\_qrp.tiff", device = "tiff", plot = research\_type\_likert\_plot\_qrp, dpi = 300, width = 40, height = 10, units = "cm")  
  
ggsave("Figures/research\_type\_likert\_plot\_qrp.eps", device = "eps", plot = research\_type\_likert\_plot\_qrp, dpi = 300, width = 40, height = 10, units = "cm")  
  
# Save for the manuscript  
ggsave("Figures/research\_type\_likert\_plot\_qrp.png", device = "png", plot = research\_type\_likert\_plot\_qrp, dpi = 300, width = 40, height = 10, units = "cm")

# Create the plot  
research\_type\_likert\_plot\_planning <- likert\_plot\_odd(survey\_questions, likert\_plot\_var\_planning, limits = c(-1, 1), text\_push = 0.02)

## `summarise()` regrouping output by 'vars', 'groups' (override with `.groups` argument)

# Save for the paper  
ggsave("Figures/research\_type\_likert\_plot\_planning.tiff", device = "tiff", plot = research\_type\_likert\_plot\_planning, dpi = 300, width = 40, height = 10, units = "cm")  
  
ggsave("Figures/research\_type\_likert\_plot\_planning.eps", device = "eps", plot = research\_type\_likert\_plot\_planning, dpi = 300, width = 40, height = 10, units = "cm")  
  
# Save for the manuscript  
ggsave("Figures/research\_type\_likert\_plot\_planning.png", device = "png", plot = research\_type\_likert\_plot\_planning, dpi = 300, width = 40, height = 10, units = "cm")

The other questions were using a 7 point scale that we will treat as an interval scale. This plot presents the mean rating per question per group with the 95% CI as the errorbar.

# Modify the data for plotting  
research\_type\_interval\_plot\_data <-   
 research\_type\_data %>%  
 select(response\_id, research\_type\_group, all\_of(interval\_plot\_vars)) %>%  
 pivot\_longer(  
 all\_of(interval\_plot\_vars),  
 names\_to = "vars",  
 values\_to = "values") %>%   
 filter(values != "I do not know",  
 values != "Not applicable") %>%   
 mutate(values = as.integer(str\_extract(values, "[0-9]{1,2}")),   
 vars = vars\_rename(vars)) %>%   
 group\_by(research\_type\_group, vars) %>%   
 summarise(mean = mean(values, na.rm = TRUE),  
 sd = sd(values, na.rm = TRUE),  
 n = n(),  
 se = sd / sqrt(n)) %>%   
 pivot\_wider(  
 names\_from = research\_type\_group,  
 values\_from = c(mean, sd, n, se)) %>%   
 mutate(mean\_difference = mean\_testing - mean\_else) %>%   
 pivot\_longer(  
 union(contains("testing"), contains("else")),  
 names\_to = c("variables", "groups"),  
 values\_to = "values",  
 names\_sep = "\_") %>%   
 pivot\_wider(  
 names\_from = variables,  
 values\_from = values) %>%   
 mutate(groups = case\_when(groups == "testing" ~ "Testing",  
 groups == "else" ~ "Else")) %>%  
 mutate(vars = as.factor(vars),  
 vars = fct\_reorder(vars, mean\_difference))  
  
# Create the plot  
research\_type\_interval\_plot <-  
 research\_type\_interval\_plot\_data %>%  
 ggplot() +  
 aes(x = as.integer(vars),  
 y = mean,  
 fill = groups,  
 group = groups) +  
 # Set error bars  
 ## Error bar for prereg group with nudged position  
 geom\_errorbar(  
 data = pick(groups == "Testing"),  
 aes(  
 ymin = mean - (se \* 1.96),  
 ymax = mean + (se \* 1.96)),  
 width = .3,  
 linetype = "dotted",  
 position = position\_nudge(x = -0.3, y = 0)) +  
 ## Error bar for control group without nudged position  
 geom\_errorbar(  
 data = pick(groups == "Else"),  
 aes(  
 ymin = mean - (se \* 1.96),  
 ymax = mean + (se \* 1.96)),  
 width = .3,  
 linetype = "dotted") +  
 # Set points  
 ## Points of prereg group with nudged position  
 geom\_point(  
 data = pick(groups == "Testing"),  
 size = 4.5,  
 shape = 21,  
 position = position\_nudge(x = -0.3, y = 0)) +  
 ## Points of control group without nudged position  
 geom\_point(  
 data = pick(groups == "Else"),  
 size = 4.5,  
 shape = 21) +  
 geom\_text(  
 aes(  
 x = as.integer(vars),  
 y = 7,  
 label = round(mean\_difference, 2)),  
 inherit.aes = FALSE,  
 size = 6,  
 hjust = -.40) +  
 scale\_fill\_manual(values = c("white", "black")) +  
 scale\_x\_continuous(  
 breaks = as.integer(unique(research\_type\_interval\_plot\_data$vars)),  
 labels = unique(research\_type\_interval\_plot\_data$vars),  
 sec.axis = sec\_axis(~ ., name = "Mean Difference Between Groups")) +  
 scale\_y\_continuous(  
 expand = c(0, 0.4),  
 breaks = c(1, 2, 3, 4, 5, 6, 7),  
 labels = c("1\nDisadvantage", "2", "3", "4", "5", "6", "7\nAdvantage")) +  
 coord\_flip(ylim = c(1, 7)) +  
 labs(x = "Aspect of Research",  
 y = "Mean Rating",  
 fill = "Groups") +  
 papaja::theme\_apa() +  
 theme(axis.title = element\_text(size = 30),  
 axis.text.y.right = element\_blank(),  
 axis.ticks.y.right = element\_blank(),  
 axis.text = element\_text(size = 15),  
 legend.text = element\_text(size = 15),  
 legend.title = element\_text(size = 20),  
 legend.position = c(.2, .8),  
 plot.margin = unit(c(.5, .5, .5, .5), "cm"))  
  
# Save for the paper  
ggsave("Figures/research\_type\_interval\_plot.tiff", device = "tiff", plot = research\_type\_interval\_plot, dpi = 300, width = 45, height = 25, units = "cm")  
  
ggsave("Figures/research\_type\_interval\_plot.eps", device = "eps", plot = research\_type\_interval\_plot, dpi = 300, width = 45, height = 25, units = "cm")  
  
# Save for the manuscript  
ggsave("Figures/research\_type\_interval\_plot.png", device = "png", plot = research\_type\_interval\_plot, dpi = 300, width = 45, height = 25, units = "cm")

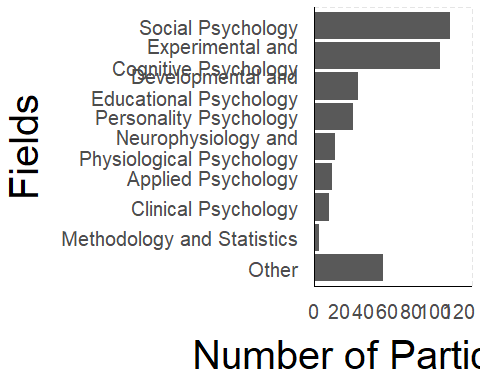
# Background information

Plot showing the distribution of reported research fields by the respondents. As some respondents reported more than one research field the number of all the research fields are not matching the number of individual respondents.

# Importing data  
fields <- read\_tsv("Data/Main/Processed/PreregistrationEvaluation\_Fields.tsv")

##   
## -- Column specification --------------------------------------------------------  
## cols(  
## response\_id = col\_character(),  
## field = col\_character(),  
## final\_field\_1 = col\_character(),  
## final\_field\_2 = col\_character(),  
## final\_field\_3 = col\_character()  
## )

# Creating bar plot showing the number of participants in each field, containing duplicates due to participants who are active in more than one field  
fields\_gathered <-   
 fields %>%   
 gather(key = "final\_field\_key", value = "final\_field\_value", -response\_id, -field, na.rm = TRUE) %>%   
 mutate(final\_field\_value = case\_when(final\_field\_value == "Neurophysiology and Physiological Psychology" ~ "Neurophysiology and\nPhysiological Psychology",  
 final\_field\_value == "Experimental and Cognitive Psychology" ~ "Experimental and\nCognitive Psychology",  
 final\_field\_value == "Developmental and Educational Psychology" ~ "Developmental and\nEducational Psychology",  
 TRUE ~ final\_field\_value))  
  
fields\_plot <-  
 fields\_gathered %>%   
 count(final\_field\_value) %>%   
 mutate(  
 final\_field\_value = forcats::fct\_reorder(final\_field\_value, n, .desc = FALSE),  
 final\_field\_value = forcats::fct\_relevel(final\_field\_value, "Other", after = 0)) %>%   
 ggplot() +  
 aes(y = n,  
 x = final\_field\_value) +  
 geom\_bar(stat = "identity") +  
 scale\_y\_continuous(  
 expand = c(0, 0),  
 limits = c(0, 130)) +  
 labs(x = "Fields",  
 y = "Number of Participants") +  
 coord\_flip() +  
 papaja::theme\_apa() +  
 theme(  
 title = element\_text(size = 20),  
 axis.title = element\_text(size = 30),  
 panel.background = element\_blank(),  
 panel.grid = element\_blank(),  
 axis.text = element\_text(size = 15),  
 axis.ticks = element\_blank(),  
 strip.background = element\_blank(),  
 strip.text = element\_text(hjust = 0, face = 'bold', size = 25),  
 panel.border = element\_rect(color = 'gray90', linetype = "dashed", fill = NA),  
 legend.key.size = unit(1, 'cm'),  
 legend.text = element\_text(size = 15))  
  
fields\_plot



# Save gathered plot for the paper  
ggsave("Figures/Fields.tiff", device = "tiff", plot = fields\_plot, dpi = 300, width = 45, height = 25, units = "cm")  
  
# Save gathered plot for the manuscript  
ggsave("Figures/Fields.png", device = "png", plot = fields\_plot, dpi = 300, width = 45, height = 25, units = "cm")