

# LLM\_Logic

Carson Chiem

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```
# importing packages and data  
library(tidyverse)
```

```
## -- Attaching core tidyverse packages ----- tidyverse 2.0.0 --  
## v dplyr      1.1.4      v readr      2.1.5  
## v forcats    1.0.0      v stringr    1.5.1  
## v ggplot2     3.4.4      v tibble     3.2.1  
## v lubridate  1.9.3      v tidyr      1.3.0  
## v purrr       1.0.2  
## -- Conflicts ----- tidyverse_conflicts() --  
## x dplyr::filter() masks stats::filter()  
## x dplyr::lag()     masks stats::lag()  
## i Use the conflicted package (<http://conflicted.r-lib.org/>) to force all conflicts to become errors
```

```
# dataset = read_csv("../data/output_responses_1-7.csv")  
dataset = read_csv("C:/CS_programs/Python/code/LLM_connectives/LLM_Logic/LLM_Logic-2/data/longu_scale_up")
```

```
## Rows: 111 Columns: 7  
## -- Column specification -----  
## Delimiter: ","  
## chr (5): Prompt, Continuation, Condition, Study, Type  
## dbl (2): Original order, Response  
##  
## i Use 'spec()' to retrieve the full column specification for this data.  
## i Specify the column types or set 'show_col_types = FALSE' to quiet this message.
```

```
# bar plot with created and original study prompts combined  
# finding average responses for each grouping of variables
```

```
avg_responses = dataset %>%  
  group_by(Continuation, Type) %>%  
  summarise(avg_response = mean(Response), sd = sd(Response, na.rm = TRUE))
```

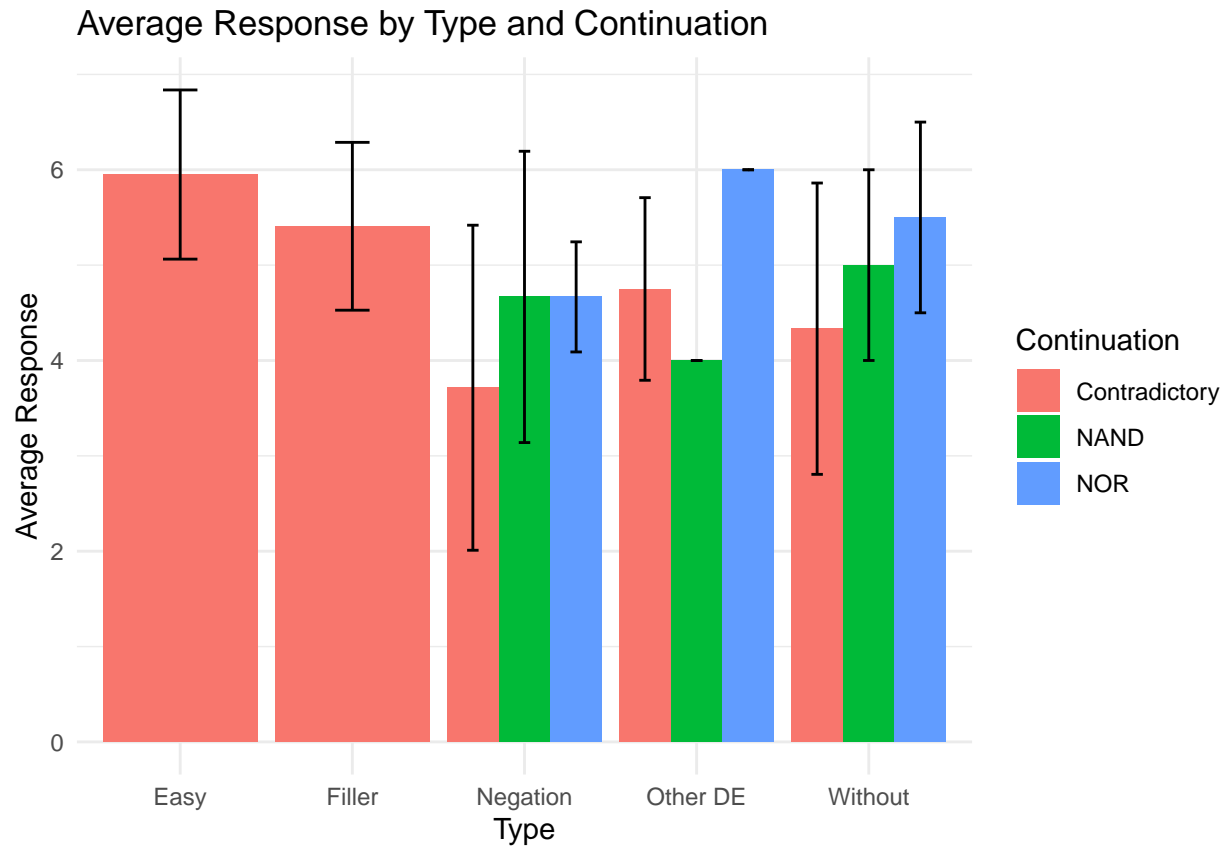
```
## 'summarise()' has grouped output by 'Continuation'. You can override using the  
## '.groups' argument.
```

```
# plotting  
ggplot(avg_responses, aes(x = Type, y = avg_response, fill = Continuation)) +  
  geom_bar(stat = "identity", position = "dodge") +  
  geom_errorbar(aes(ymin = avg_response - sd, ymax = avg_response + sd),
```

```

    position = position_dodge(0.9), width = 0.2) +
  labs(title = "Average Response by Type and Continuation",
       x = "Type",
       y = "Average Response") +
  theme_minimal()

```



```

# bar plot with separate graphs for original and created prompts
# finding average responses for each grouping of variables including study
avg_responses_S = dataset %>%
  group_by(Continuation, Type, Study) %>%
  summarise(avg_response = mean(Response), sd = sd(Response, na.rm = TRUE))

```

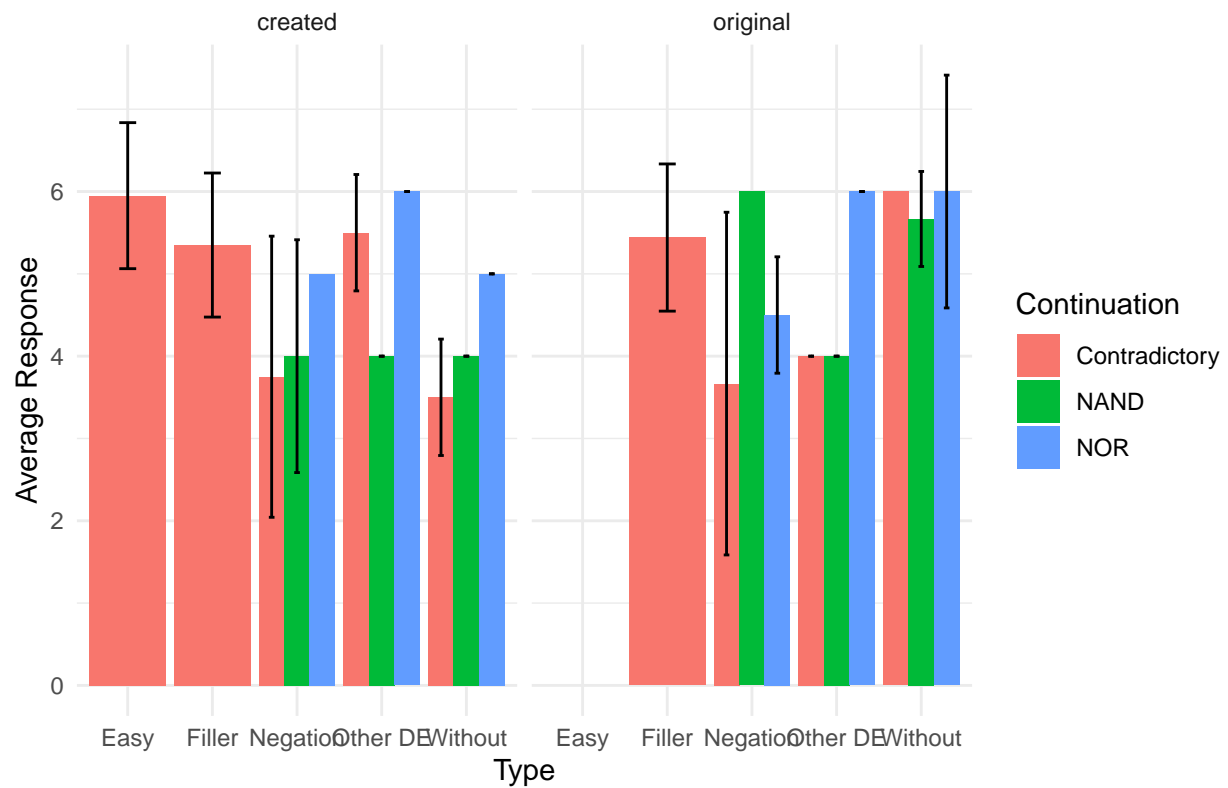
## 'summarise()' has grouped output by 'Continuation', 'Type'. You can override  
## using the '.groups' argument.

```

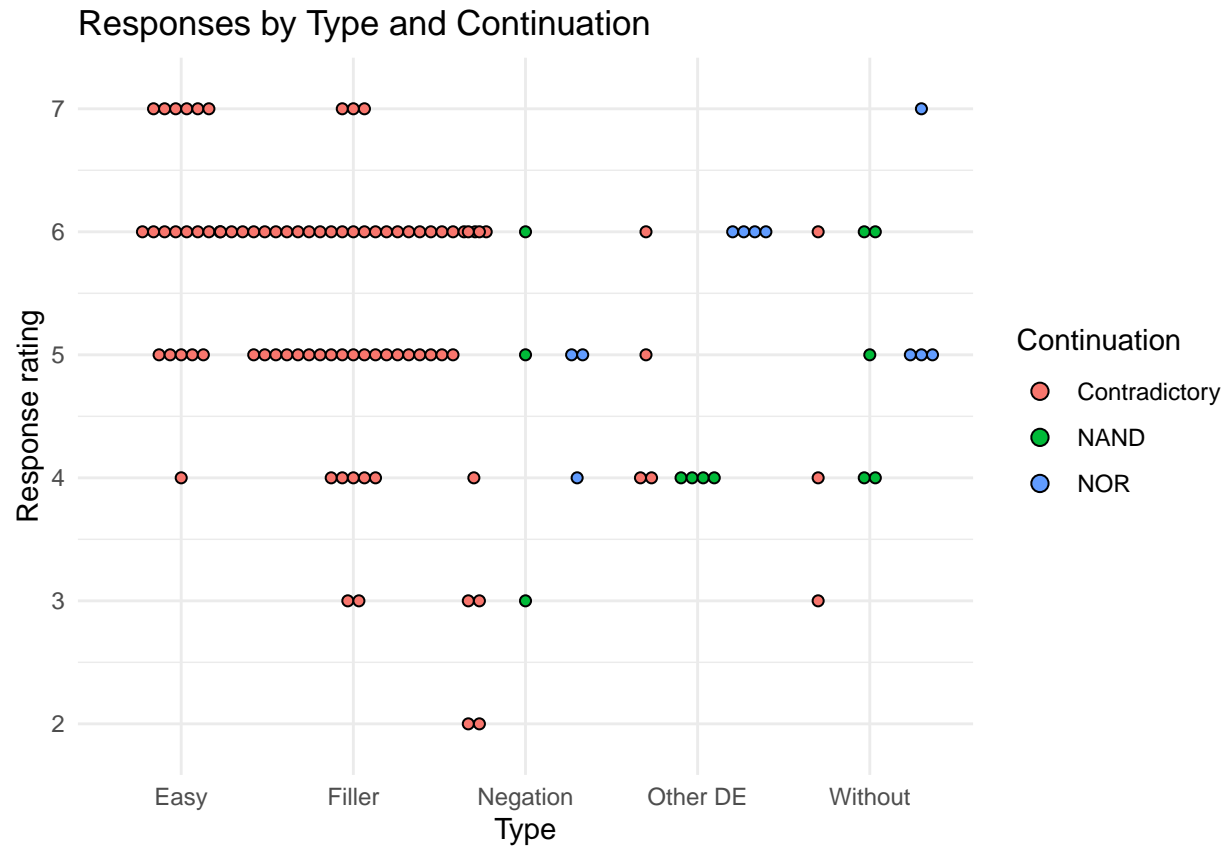
# plotting
ggplot(avg_responses_S, aes(x = Type, y = avg_response, fill = Continuation)) +
  geom_bar(stat = "identity", position = "dodge") +
  facet_wrap(~ Study) +
  geom_errorbar(aes(ymin = avg_response - sd, ymax = avg_response + sd), na.rm = TRUE, position = position_dodge(0.9)) +
  labs(title = "Average Response by Type and Continuation, separated by study",
       x = "Type",
       y = "Average Response") +
  theme_minimal()

```

Average Response by Type and Continuation, separated by study



```
# Dot plot
# plotting
ggplot(dataset, aes(x = Type, y = Response, fill = Continuation)) +
  geom_dotplot(binaxis = "y", stackdir = "center", position = "dodge", dotsize=.3, binwidth = .3) +
  labs(title = "Responses by Type and Continuation",
        x = "Type",
        y = "Response rating") +
  theme_minimal()
```



```
# Dot plot
# plotting
ggplot(dataset, aes(x = Type, y = Response, fill = Continuation)) +
  geom_dotplot(binaxis = "y", stackdir = "center", position = "dodge", dotsize=.3, binwidth = .3) +
  facet_wrap(~ Study) +
  labs(title = "Responses by Type and Continuation, separated by study",
        x = "Type",
        y = "Response rating") +
  theme_minimal()
```

### Responses by Type and Continuation, separated by study

