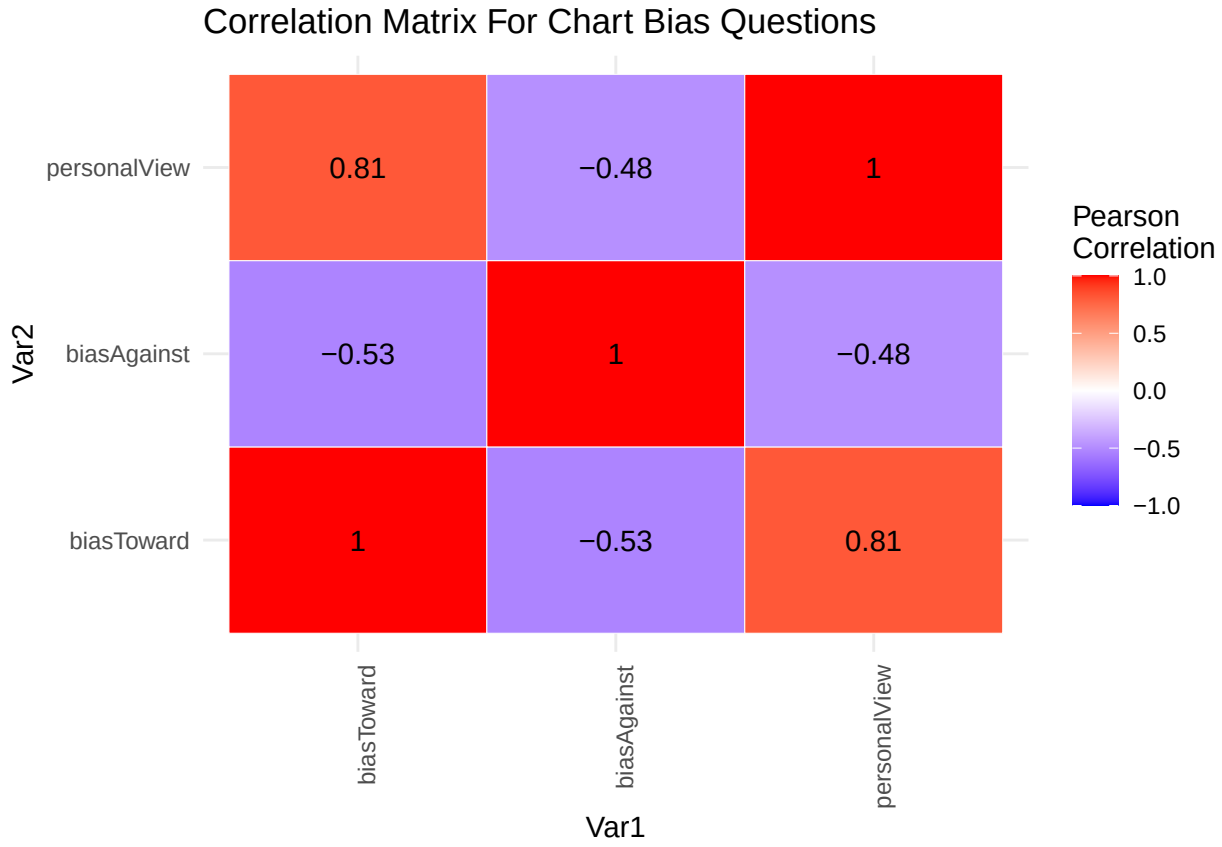
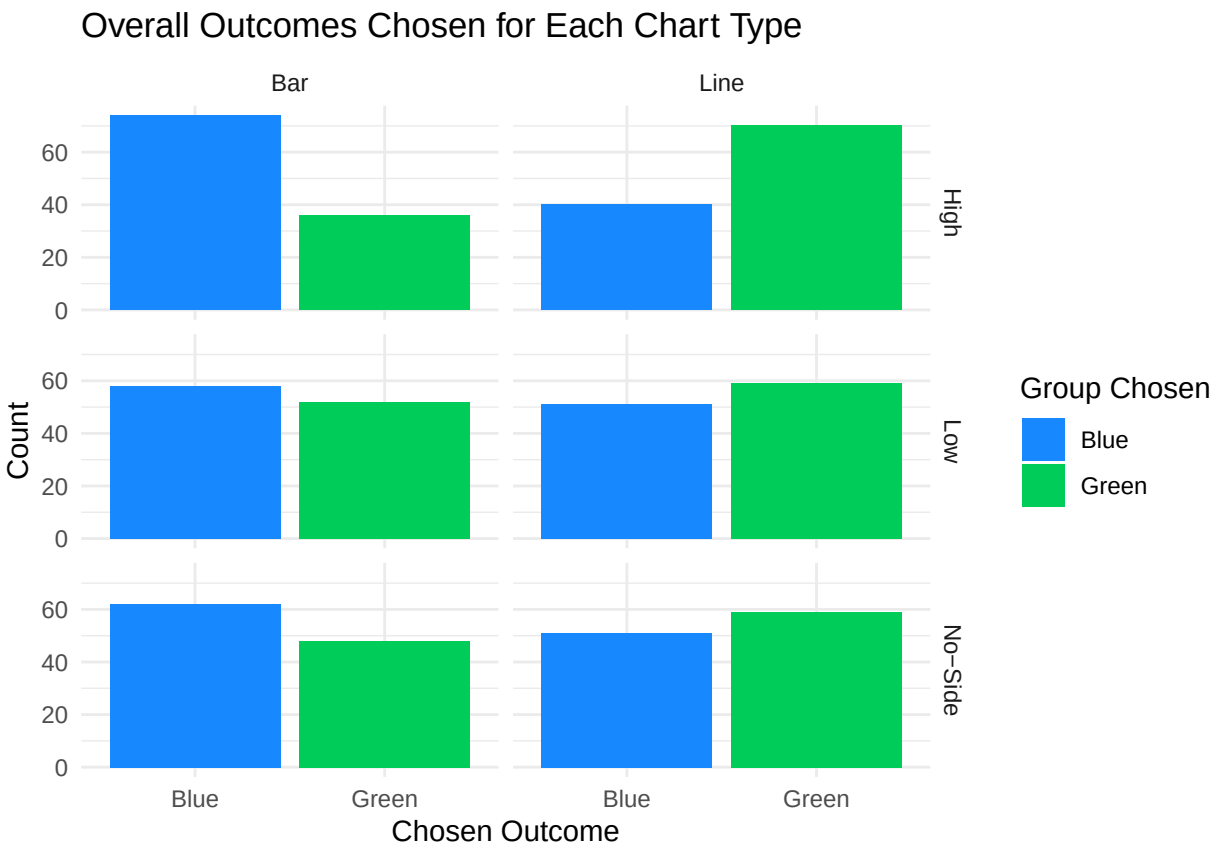
study 2 analysis

2023-03-08

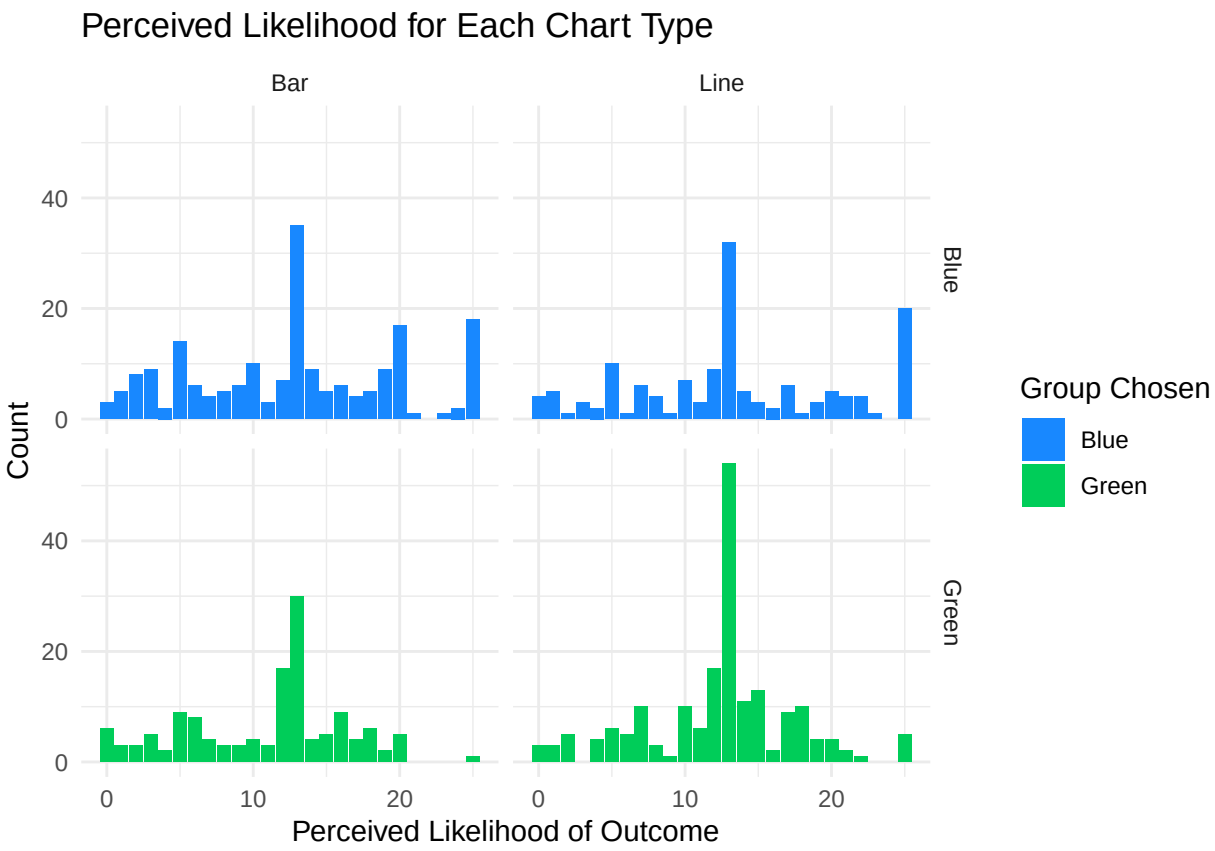
```
## ## FSA v0.9.4. See citation('FSA') if used in publication.
## ## Run fishR() for related website and fishR('IFAR') for related book.

## Loading required package: Matrix

##
## Please cite as:

##  Hlavac, Marek (2022). stargazer: Well-Formatted Regression and Summary Statistics Tables.

##  R package version 5.2.3. https://CRAN.R-project.org/package=stargazer

## -- Attaching packages --------------------------------------- tidyverse 1.3.2 --
## v ggplot2 3.4.0      v purrr   0.3.5
## v tibble  3.1.8      v dplyr   1.0.10
## v tidyr   1.2.1      v stringr 1.4.1
## v readr   2.1.3      v forcats 0.5.2
## -- Conflicts ------------------------------------------ tidyverse_conflicts() --
## x tidyr::expand() masks Matrix::expand()
## x dplyr::filter() masks stats::filter()
## x dplyr::lag()    masks stats::lag()
## x tidyr::pack()   masks Matrix::pack()
## x tidyr::unpack() masks Matrix::unpack()

##  [1] "pt"                "winning_party"     "winning_party.1"
##  [4] "winning_scale_1"   "winning_scale_1.1" "pct.chances_blue"
##  [7] "pct.chances_green" "pct_tie"           "biasToward_1"
## [10] "biasToward_1.1"    "biasAgainst_1"     "biasAgainst_1.1"
## [13] "personalView_1"    "personalView_1.1"  "age"
## [16] "education"         "survey_about"      "comments"
## [19] "Order"             "Prime"             "Strength"
## [22] "ChartType"         "Slant"             "Stimulus"
```


Correlation Matrix For Chart Bias Questions
personalView
biasAgainst
biasToward
Var2
0.81
−0.48
1
−0.53
1
−0.48
1
−0.53
0.81
biasToward
biasAgainst
personalView
Var1
Pearson Correlation
1.0
0.5
0.0
−0.5
−1.0




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

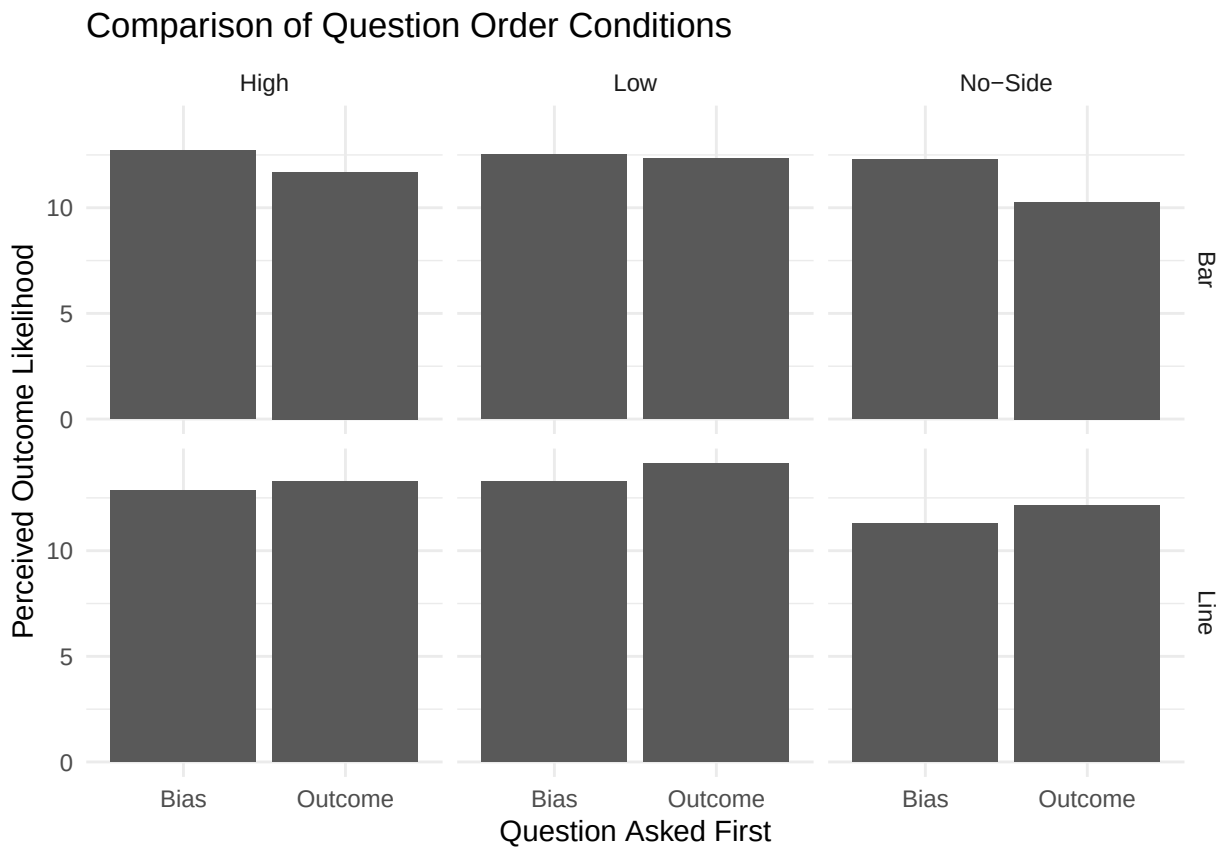
```
## # A tibble: 4 x 3
## # Groups:   ChartType [2]
##   ChartType chosen_outcome     n
##   <chr>     <chr>          <int>
## 1 Bar       Blue             194
## 2 Bar       Green            136
## 3 Line      Blue             142
## 4 Line      Green            188
```



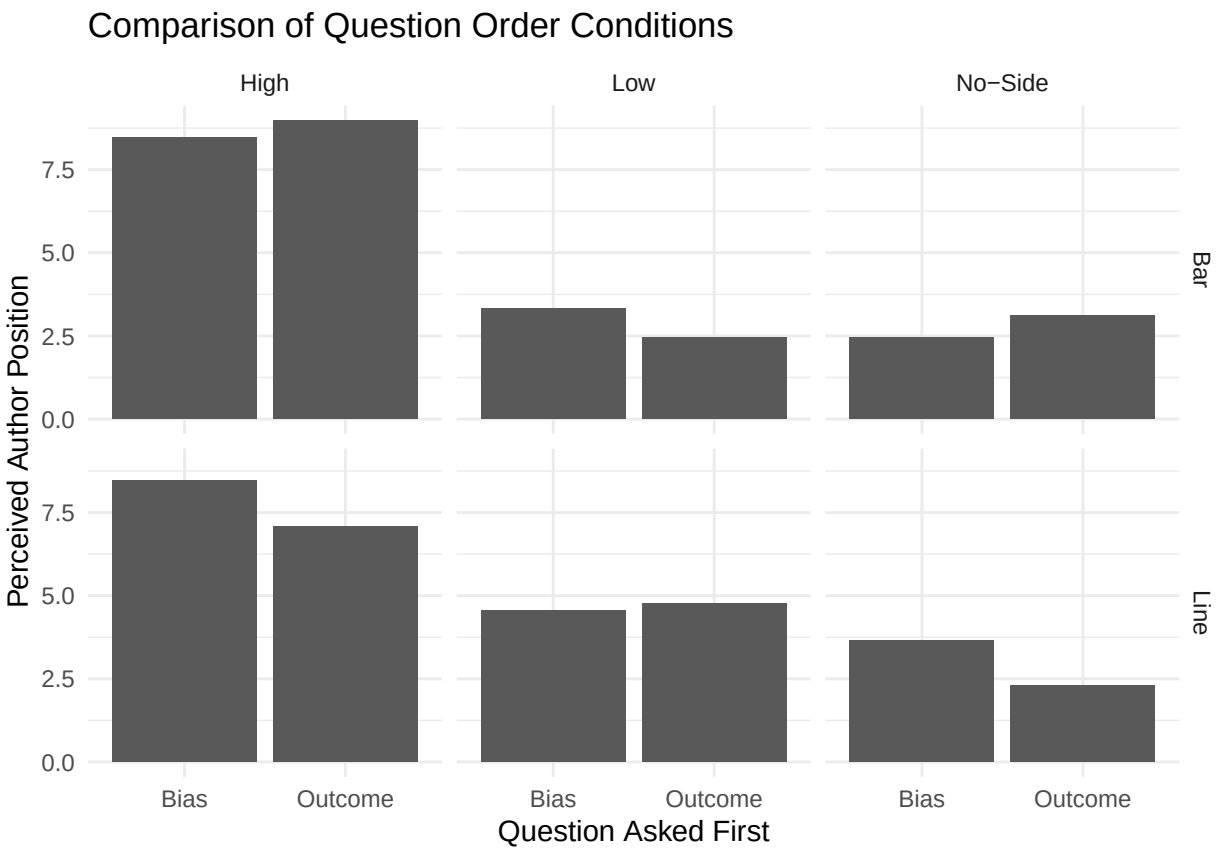
Analysis

First, we want to evaluate whether the question order resulted in different outcome or bias ratings. if this is the case, we need to perform separate analyses for these results, particularly if there is an interaction between priming and bias condition.

```
ggplot(df, aes(y = outcome_confidence_abs, x = Prime))+
  geom_bar(stat = "summary", fun = "mean")+
  facet_grid(ChartType ~ Strength)+
  labs(title = "Comparison of Question Order Conditions",
       y = "Perceived Outcome Likelihood",
       x = "Question Asked First")
```



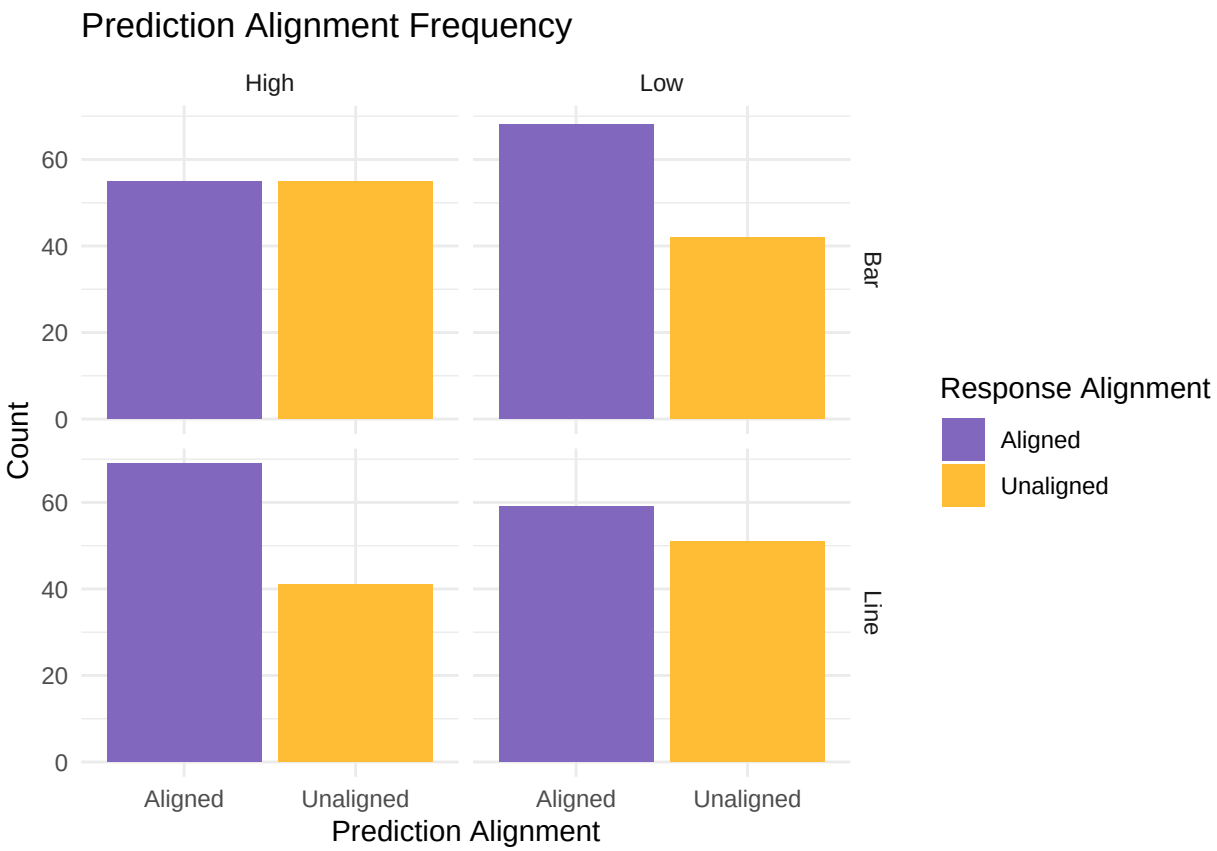

```
ggplot(df, aes(y = author_confidence_abs, x = Prime))+
  geom_bar(stat = "summary", fun = "mean")+
  facet_grid(ChartType ~ Strength)+
  labs(title = "Comparison of Question Order Conditions",
       y = "Perceived Author Position",
       x = "Question Asked First")
```



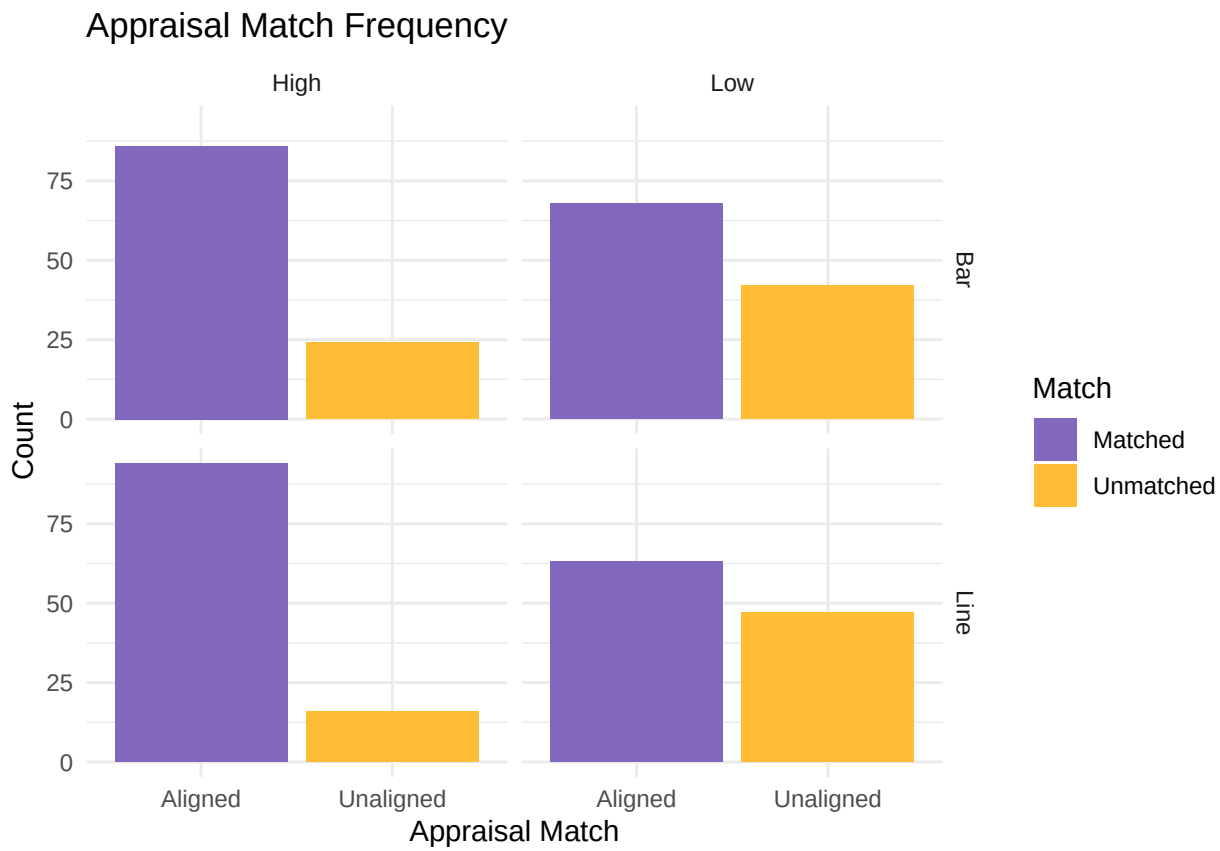
Hypotheses 1.1-1.2

1.1. It is more likely to report judgments in alignment with the group supported in the text. 1.2. Responses aligned with the group supported in the text are more confident than responses unaligned with the group supported and control responses.

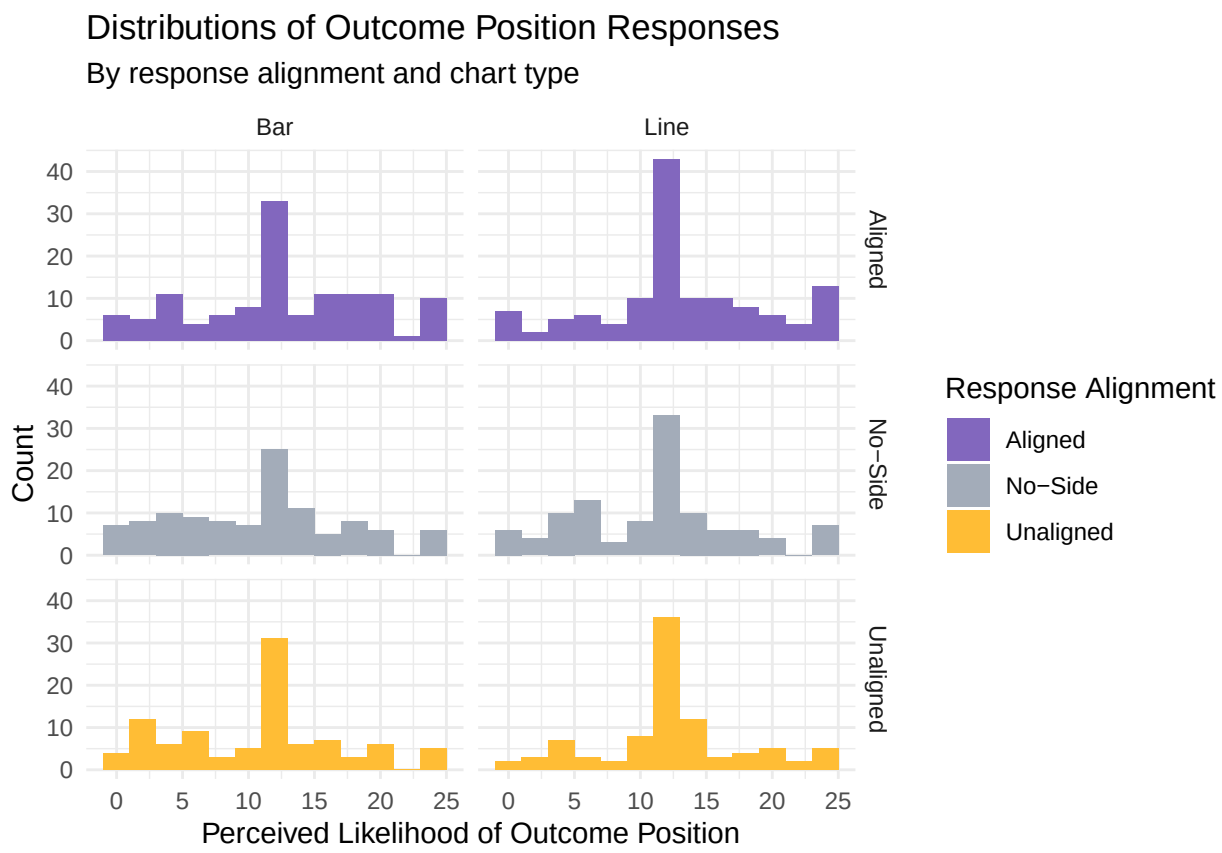
```
ggplot(subset(df, treatment == "Treatment"), aes(x = outcome_aligned, y = after_stat(count), fill = out
  geom_bar()+
  scale_fill_manual(values = c(a, u, c))+
  labs(
    title = "Prediction Alignment Frequency",
    y = "Count",
    x = "Prediction Alignment",
    fill = "Response Alignment"
  )+
  facet_grid(ChartType ~ Strength)
```




```
ggplot(subset(df, treatment == "Treatment"), aes(x = author_aligned, y = after_stat(count), fill = autho
  geom_bar()+
  scale_fill_manual(values = c(a, u, c), labels= c("Matched", "Unmatched"))+
  labs(
    title = "Appraisal Match Frequency",
    y = "Count",
    x = "Appraisal Match"
  )+
  facet_grid(ChartType ~ Strength)+
  guides(fill = guide_legend(title = "Match"))
```




```
ggplot(df, aes(x = outcome_confidence_abs, y = after_stat(count)))+
  geom_histogram(binwidth = 2, aes(fill = outcome_aligned))+
  labs(
    title = "Distributions of Outcome Position Responses",
    subtitle = "By response alignment and chart type",
    x = "Perceived Likelihood of Outcome Position",
    y = "Count",
    fill = "Response Alignment"
  )+
  scale_fill_manual(values = c(a, c, u))+
  facet_grid(outcome_aligned ~ ChartType)
```



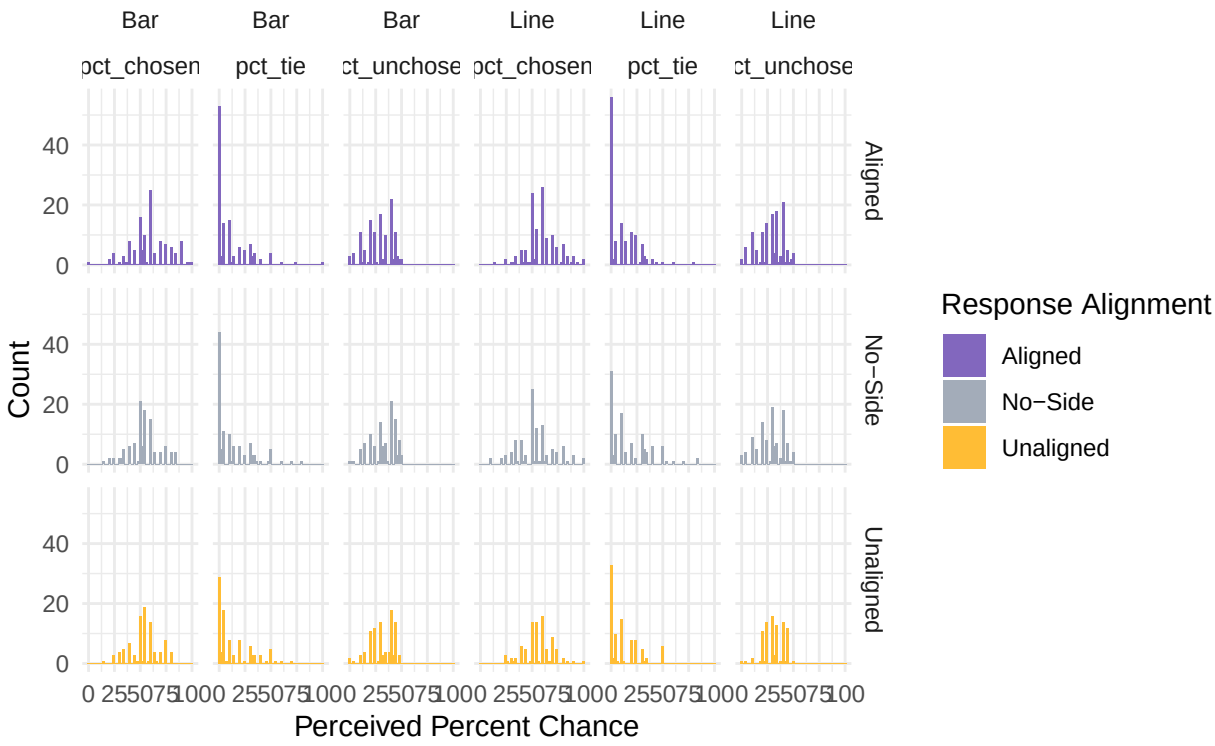

```
ggplot(df, aes(x = author_confidence_abs, y = after_stat(count)))+
  geom_histogram(binwidth = 2, aes(fill = author_aligned))+
  labs(
    title = "Distributions of Author Position Responses",
    subtitle = "By response alignment and chart type",
    x = "Perceived Likelihood of Author Position",
    y = "Count",
    fill = "Response Alignment"
  )+
  scale_fill_manual(values = c(a, c, u))+
  facet_grid(author_aligned ~ ChartType)
```

These have been replications of the hypotheses from Study 1. We have additional hypotheses regarding the percent chances, which were not collected in Study 1. With these, we evaluate this effect using another type of outcome response.

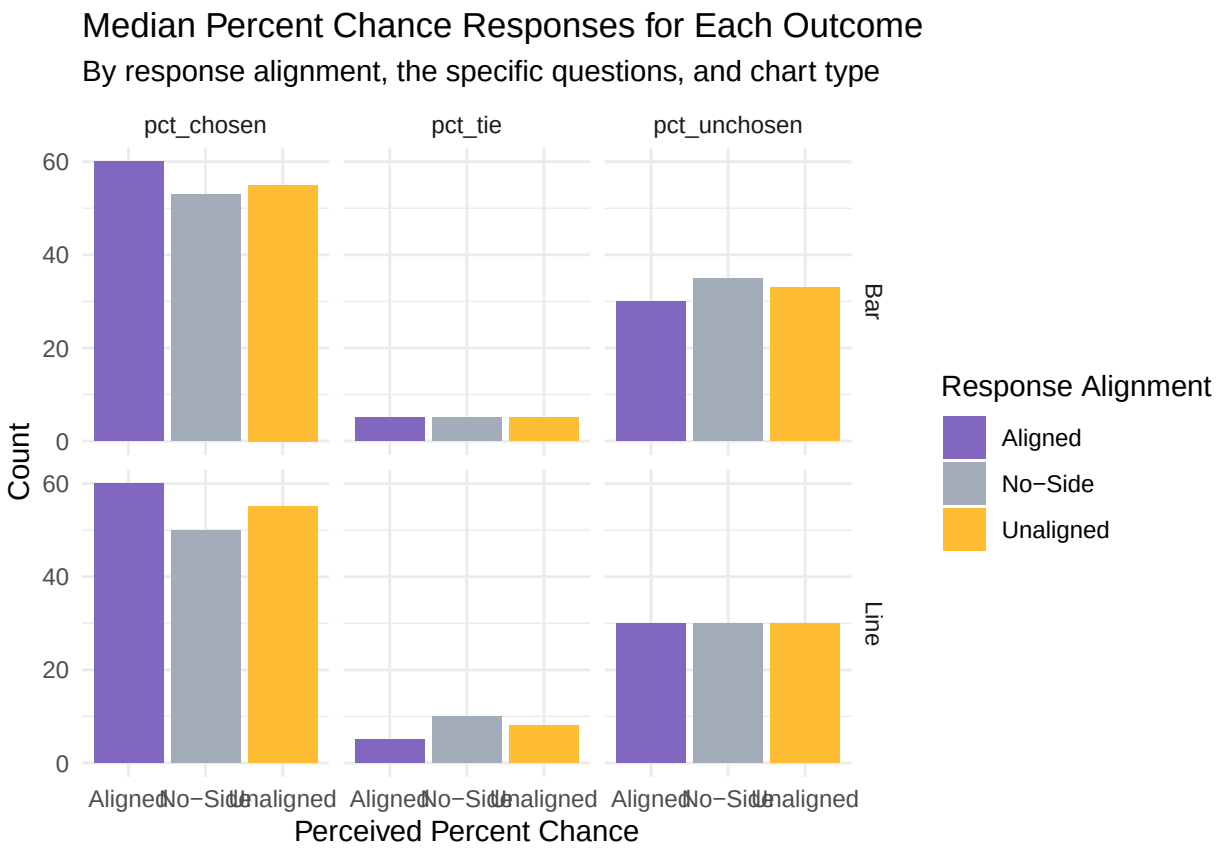
Hypothesis 1.2 (new variables)

1.3. Participants who respond in alignment with the slant presented estimate a higher likelihood for their selected outcome than participants who are unaligned. 1.4. Participants who respond in alignment with the slant presented estimate a lower likelihood for the non-selected outcome than participants who are unaligned. 1.5. Participants who respond in alignment with the slant presented estimate a lower likelihood for a tie than participants who are unaligned.

```
ggplot(df %>% gather(key = pct_source, value = pct_response, pct_chosen, pct_unchosen, pct_tie),
       aes(x = pct_response, y = after_stat(count)))+
  geom_histogram(binwidth = 2, aes(fill = outcome_aligned))+
  labs(
    title = "Distributions of Percent Chance Responses for Each Outcome",
    subtitle = "By response alignment, the specific questions, and chart type",
    x = "Perceived Percent Chance",
    y = "Count",
    fill = "Response Alignment"
  )+
  scale_fill_manual(values = c(a, c, u))+
  facet_grid(outcome_aligned ~ ChartType + pct_source)
```




```
ggplot(df %>% gather(key = pct_source, value = pct_response, pct_chosen, pct_unchosen, pct_tie),
       aes(y = pct_response, x = outcome_aligned, fill = outcome_aligned))+
  geom_bar(stat = "summary", fun = "median")+
  labs(
    title = "Median Percent Chance Responses for Each Outcome",
    subtitle = "By response alignment, the specific questions, and chart type",
    x = "Perceived Percent Chance",
    y = "Count",
    fill = "Response Alignment"
  )+
  scale_fill_manual(values = c(a, c, u))+
  facet_grid(ChartType ~ pct_source)
```



After investigating these initial hypotheses, we move on to the hypotheses examining the role of the bias condition.

Hypotheses 5.1-5.2

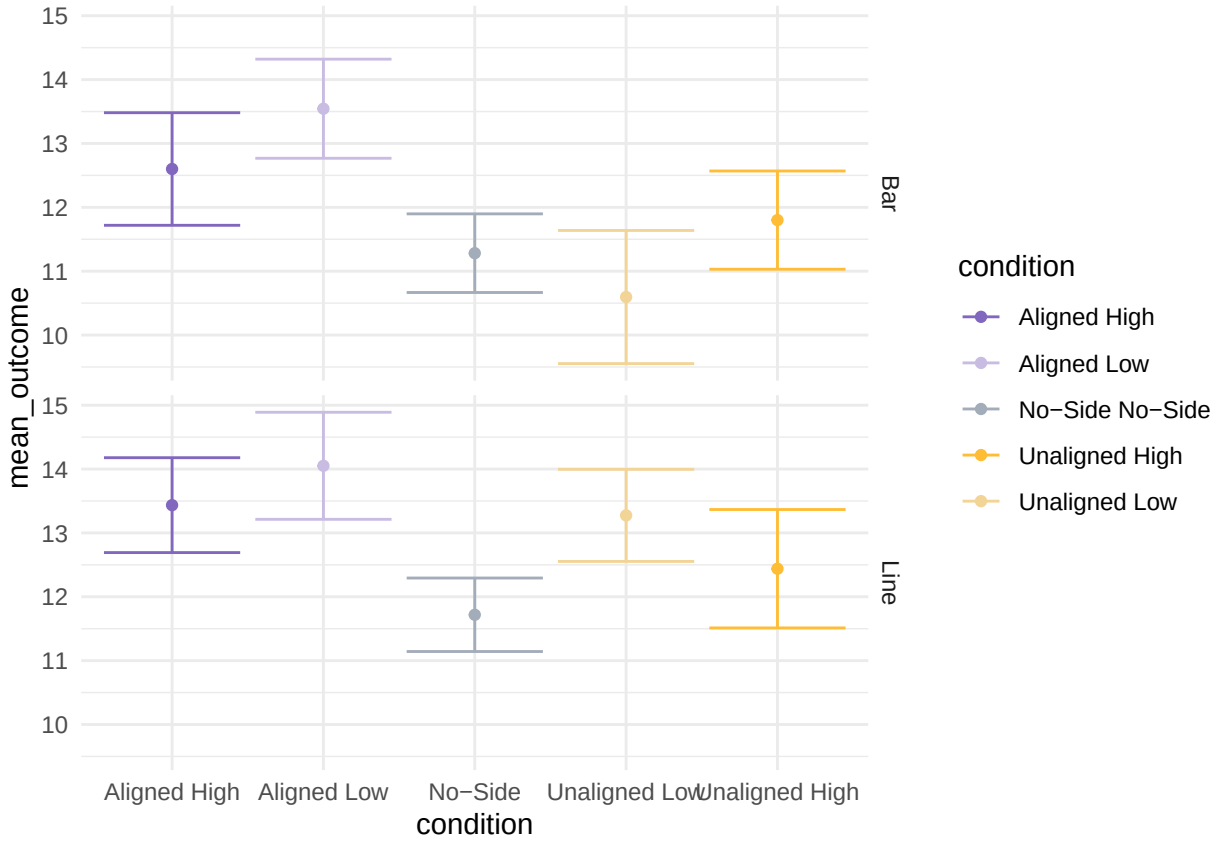
5.1. Participants who viewed stronger language and were aligned with the chart outcome presented were more confident in their outcome responses than those who viewed weaker language (as well as control).

5.2. Participants who viewed stronger language and were unaligned with the chart outcome presented were more confident in their outcome responses than those who viewed weaker language (no different than control).

```
condition_vis <- df %>%
  group_by(ChartType, outcome_aligned, Strength) %>%
  summarize(
    mean_outcome = mean(outcome_confidence_abs),
    sd_outcome = sd(outcome_confidence_abs),
    n_outcome = n(),
    se_outcome = sd_outcome / sqrt(n_outcome)
  ) %>%
  mutate(
    condition = paste(outcome_aligned, Strength)
  )
```

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

```
ggplot(condition_vis, aes(x = condition, y = mean_outcome, color = condition))+
  geom_point()+
  geom_errorbar(aes(ymin = mean_outcome - se_outcome, ymax = mean_outcome + se_outcome))+
  scale_x_discrete(limits = c("Aligned High", "Aligned Low", "No-Side No-Side", "Unaligned Low", "Unalig
  scale_color_manual(values = c(a, a1, c, u, u1))+
  facet_grid(ChartType ~.)
```




```
ggplot(subset(df, treatment == "Treatment"), aes(x = outcome_aligned, y = author_confidence_abs, fill =
  geom_bar(stat = "summary", fun = "mean")+
  scale_fill_manual(values = c(a, u))+
  labs(
    title = "Mean Author Position Rating by Outcome Alignment",
    subtitle = "Did people perceive the author as having a more extreme position if they disagreed with
    y = "Average ppraisal",
    x = "Prediction Alignment",
    fill = "Response Alignment"
  )+
  facet_grid(ChartType ~ Strength)
```

Mean Author Position Rating by Outcome Alignment

Did people perceive the author as having a more extreme position if they disagreed with