Analyses

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```
library(ggplot2)
library(jsonlite)
library(vcd)
```

```
## Loading required package: grid
```

```
# To suppress the conflicts of the packages with base R functions
suppressPackageStartupMessages(library(tidyverse))
suppressPackageStartupMessages(library(dplyr))
df <- fromJSON("predicted-dataset-updated.json")
df <- df %>%
  mutate(
    persuasion_success = factor(persuasion_success,
                                levels = c(0,1),
                                labels = c("No Delta", "Yes Delta")),
    story_class = factor(story_class),
    suspense = as.integer(suspense),
    curiosity = as.integer(curiosity),
    surprise = as.integer(surprise)
  )
```

Chi-Square Test & Cramer's V

```
table <- table(df$story_class, df$persuasion_success)
(chisquare <- chisq.test(table))
```

```
##
##  Pearson's Chi-squared test with Yates' continuity correction
##
## data:  table
## X-squared = 145.74, df = 1, p-value < 2.2e-16
```

```
(cramerv <- assocstats(table)$cramer)
```

```
## [1] 0.03876783
```

Suspense: Mann-Whitney U Test & Z-Test (effect size)

```r
# suspense
(u_susp <- wilcox.test(suspense ~ persuasion_success, data = df, exact = FALSE))
```

```
##
##  Wilcoxon rank sum test with continuity correction
##
## data:  suspense by persuasion_success
## W = 66419288, p-value < 2.2e-16
## alternative hypothesis: true location shift is not equal to 0
```

```r
# z-value and effect size r = Z / sqrt(N)
Z_susp <- qnorm(u_susp$p.value / 2, lower.tail = FALSE)
N <- nrow(df)
(r_susp <- Z_susp / sqrt(N))
```

```
## [1] 0.03034591
```

Curiosity: Mann-Whitney U Test & Z-Test (effect size)

```r
# curiosity
(u_curi <- wilcox.test(curiosity ~ persuasion_success, data = df, exact = FALSE))
```

```
##
##  Wilcoxon rank sum test with continuity correction
##
## data:  curiosity by persuasion_success
## W = 58559253, p-value < 2.2e-16
## alternative hypothesis: true location shift is not equal to 0
```

```r
# z-value and effect size r = Z / sqrt(N)
Z_curi <- qnorm(u_curi$p.value / 2, lower.tail = FALSE)
N <- nrow(df)
(r_curi <- Z_curi / sqrt(N))
```

```
## [1] 0.0521501
```

Surprise: Mann-Whitney U Test & Z-Test (effect size)

```r
# surprise
(u_surp <- wilcox.test(surprise ~ persuasion_success, data = df, exact = FALSE))
```

```
##
##  Wilcoxon rank sum test with continuity correction
##
## data:  surprise by persuasion_success
## W = 65050689, p-value < 2.2e-16
## alternative hypothesis: true location shift is not equal to 0
```

```r
# z-value and effect size r = Z / sqrt(N)
Z_surp <- qnorm(u_surp$p.value / 2, lower.tail = FALSE)
N <- nrow(df)
(r_surp <- Z_surp / sqrt(N))
```

```
## [1] 0.03442522
```

Logistic Regression with Interaction Terms

```r
full_model <- glm(
  persuasion_success ~ story_class
    + suspense + curiosity + surprise
    + story_class:suspense
    + story_class:curiosity
    + story_class:surprise,
  data = df,
  family = binomial
)

summary(full_model)
```

```
##
## Call:
## glm(formula = persuasion_success ~ story_class + suspense + curiosity +
##     surprise + story_class:suspense + story_class:curiosity +
##     story_class:surprise, family = binomial, data = df)
##
## Coefficients:
##                             Estimate Std. Error z value Pr(>|z|)
## (Intercept)                -4.30627    0.10279 -41.894  < 2e-16 ***
## story_classStory            0.48701    0.30218   1.612  0.10704
## suspense                   -0.57342    0.11482  -4.994 5.91e-07 ***
## curiosity                   0.67698    0.05471  12.375  < 2e-16 ***
## surprise                   -0.25691    0.08341  -3.080  0.00207 **
## story_classStory:suspense   0.63216    0.14700   4.300 1.71e-05 ***
## story_classStory:curiosity -0.52264    0.09845  -5.309 1.10e-07 ***
## story_classStory:surprise   0.11471    0.10722   1.070  0.28470
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for binomial family taken to be 1)
##
##     Null deviance: 15875  on 97567  degrees of freedom
## Residual deviance: 15598  on 97560  degrees of freedom
## AIC: 15614
##
## Number of Fisher Scoring iterations: 7
```