PretendPlay_Gesture_Analysis

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```
##
## The downloaded binary packages are in
##  /var/folders/w3/z47w_pmn3h190rzxwvk815w40000gn/T//RtmpGmnnOz/downloaded_packages
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## -- 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   3.5.1     v tibble    3.2.1
## v lubridate 1.9.4     v tidyr     1.3.1
## v purrr     1.0.4
## -- 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
## Loading required package: carData
##
##
## Attaching package: 'car'
##
##
## The following object is masked from 'package:dplyr':
##
##     recode
##
##
## The following object is masked from 'package:purrr':
##
##     some
##
##
##
## Attaching package: 'rstatix'
##
##
## The following objects are masked from 'package:effectsize':
##
```

```
##     cohens_d, eta_squared
##
##
## The following object is masked from 'package:stats':
##
##     filter
```

My data is in a dataframe called 'merged_[timepoint]' with columns:

- GroupStatus: Factor with levels "TD" and "PL"

- gesture_all: Count of all gestures

- gesture_rep: Count of representational gestures

- gesture_icon: Count of iconic gestures

- C-wpu: Language ability measure

- c_pret: Frequency of pretend play instances

1. Check the correlations between your gesture variables

```
##              gesture_all gesture_rep gesture_icon
## gesture_all   1.00000000  0.06372945   0.06372945
## gesture_rep   0.06372945  1.00000000   1.00000000
## gesture_icon  0.06372945  1.00000000   1.00000000
```

2. Conduct Univariate analyses for each gesture type

```
##
## Total gestures ANOVA:
```

```
##                Df Sum Sq Mean Sq F value   Pr(>F)
## GroupStatus     1    1.2  1.2109   24.74 6.58e-07 ***
## Residuals   40705 1992.2  0.0489
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
##
## Representational gestures ANOVA:
```

```
##                Df Sum Sq  Mean Sq F value   Pr(>F)
## GroupStatus     1  0.003 0.003260   14.75 0.000123 ***
## Residuals   40705  8.995 0.000221
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
##
## Iconic gestures ANOVA:
```

```
##                Df Sum Sq  Mean Sq F value   Pr(>F)
## GroupStatus     1  0.003 0.003260   14.75 0.000123 ***
## Residuals   40705  8.995 0.000221
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

3. Descriptive statistics by group

```
##   GroupStatus gesture_all.mean gesture_all.sd gesture_all.n gesture_rep.mean
## 1          BI     4.465617e-02   2.065545e-01  1.542900e+04     5.833171e-04
## 2          TD     5.589841e-02   2.297300e-01  2.527800e+04     0.000000e+00
##   gesture_rep.sd gesture_rep.n gesture_icon.mean gesture_icon.sd gesture_icon.n
## 1   2.414570e-02  1.542900e+04      5.833171e-04    2.414570e-02   1.542900e+04
## 2   0.000000e+00  2.527800e+04      0.000000e+00    0.000000e+00   2.527800e+04
```

4. Calculate effect sizes for ANOVAs

```
##
## Effect sizes:
## Total gestures:  GroupStatus
## 0.0006074494
## Representational gestures: GroupStatus
## 0.000362305
## Iconic gestures: GroupStatus
## 0.000362305
```

5. Visualization