

Imitating the Robots: Measuring Memory Flexibility with Monolingual and Bilingual Preschoolers

Main Analyses

2022-09-09

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Libraries

Loading datasets

Data Cleaning and Dropping Children or/and Poses

Analyses Plans

#1: Only children who had 4 valid poses during test [aka Approach 1]

In this analysis I only include children who have had 4 valid test trials. Two DVs are analyzed using this filter: - score_1 = totalsteps + totalpairs

Score 1 Descriptives

```
##                               item group1  group2 vars  n  mean   sd min max range
## total_comp_score_11           1      0 baseline   1 54  0.30  1.0  0  6      6
## total_comp_score_12           2      1 baseline   1 22  0.45  1.9  0  9      9
## total_comp_score_13           3      0   test    1 54  9.76  5.8  0 22     22
## total_comp_score_14           4      1   test    1 22 11.77  5.4  0 22     22
## total_comp_ratio_score_11      5      0 baseline   2 54  1.20  4.2  0 25     25
## total_comp_ratio_score_12      6      1 baseline   2 22  1.91  8.1  0 38     38
## total_comp_ratio_score_13      7      0   test    2 54 40.61 24.3  0 92     92
## total_comp_ratio_score_14      8      1   test    2 22 49.14 22.8  0 92     92
##                               se
## total_comp_score_11      0.14
## total_comp_score_12      0.41
## total_comp_score_13      0.79
## total_comp_score_14      1.16
## total_comp_ratio_score_11 0.57
## total_comp_ratio_score_12 1.73
## total_comp_ratio_score_13 3.31
## total_comp_ratio_score_14 4.86
```

```
##                               item  group1 vars  n  mean   sd median trimmed  mad
## total_comp_score_11           1 baseline   1 76  0.34  1.3      0  0.016  0.0
## total_comp_score_12           2   test    1 76 10.34  5.8     11 10.323  5.9
## total_comp_ratio_score_11      3 baseline   2 76  1.41  5.6      0  0.065  0.0
## total_comp_ratio_score_12      4   test    2 76 43.08 24.1     46 42.984 24.5
##                               min max range  skew kurtosis  se
## total_comp_score_11           0  9      9  4.844   25.21 0.15
## total_comp_score_12           0 22     22 -0.092   -0.85 0.66
## total_comp_ratio_score_11      0 38     38  4.950   26.33 0.64
## total_comp_ratio_score_12      0 92     92 -0.089   -0.83 2.76
```

Demographics

```
##
## Descriptive statistics by group
## group: 0
##      vars  n    mean    sd    min    max    range    se
## edu_avg    1 54    17.54    1.27   15.0   20.0     5.0    0.17
```

```
## income      2 54 95070.35 30487.85 44503.0 172442.0 127939.0 4148.87
## l1_overall  3 54   94.49    8.00   64.5   100.0    35.5    1.09
## l2_overall  4 54    4.70    6.34    0.0    19.9    19.9    0.86
## l3_overall  5 54    0.62    2.28    0.0    14.9    14.9    0.31
## -----
## group: 1
##      vars  n    mean    sd    min    max    range    se
## edu_avg   1 22   17.66   1.17   16.0   20.0     4.0    0.25
## income    2 22 82317.14 29762.69 47996.0 161886.0 113890.0 6345.43
## l1_overall 3 22   63.74  11.16   38.6   80.0    41.4    2.38
## l2_overall 4 22   32.03   7.87   20.0   45.5    25.5    1.68
## l3_overall 5 22    3.55   5.96    0.0   18.8    18.8    1.27

##      vars  n    mean    sd    min    max    range    se
## edu_avg   1 54   17.54   1.27   15.0   20.0     5.0    0.17
## income    2 54 95070.35 30487.85 44503.0 172442.0 127939.0 4148.87
## l1_overall 3 54   94.49    8.00   64.5   100.0    35.5    1.09
## l2_overall 4 54    4.70    6.34    0.0    19.9    19.9    0.86
## l3_overall 5 54    0.62    2.28    0.0    14.9    14.9    0.31

##      vars  n    mean    sd    min    max    range    se
## edu_avg   1 22   17.66   1.17   16.0   20.0     4.0    0.25
## income    2 22 82317.14 29762.69 47996.0 161886.0 113890.0 6345.43
## l1_overall 3 22   63.74  11.16   38.6   80.0    41.4    2.38
## l2_overall 4 22   32.03   7.87   20.0   45.5    25.5    1.68
## l3_overall 5 22    3.55   5.96    0.0   18.8    18.8    1.27

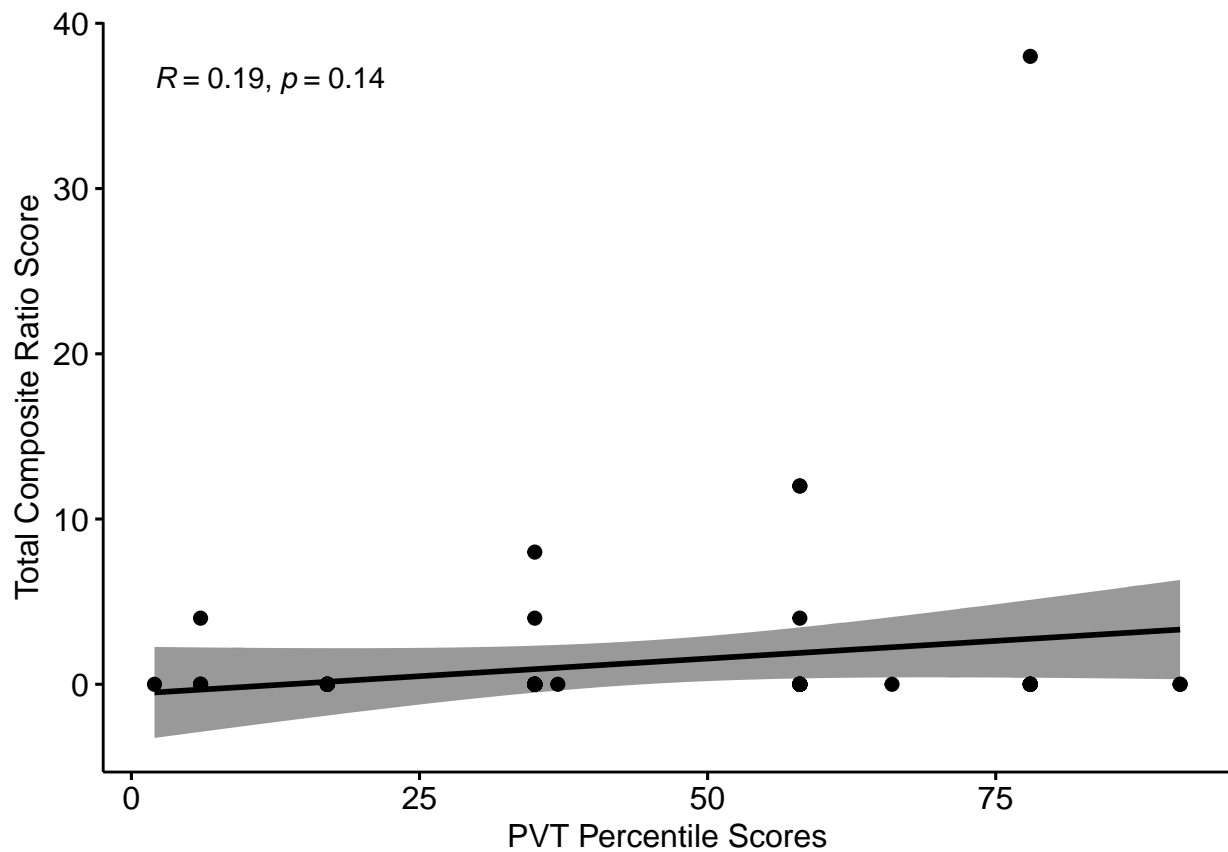
## # A tibble: 4 x 6
## # Groups:   condition [2]
##   condition bilingual mean_score sd_score min_score max_score
##   <chr>         <dbl>      <dbl>   <dbl>    <dbl>    <dbl>
## 1 baseline         0        1.2     4.19      0         25
## 2 baseline         1        1.91    8.11      0         38
## 3 test             0       40.6    24.3      0         92
## 4 test             1       49.1    22.8      0         92
```

Correlation Maps

t-tests for demo

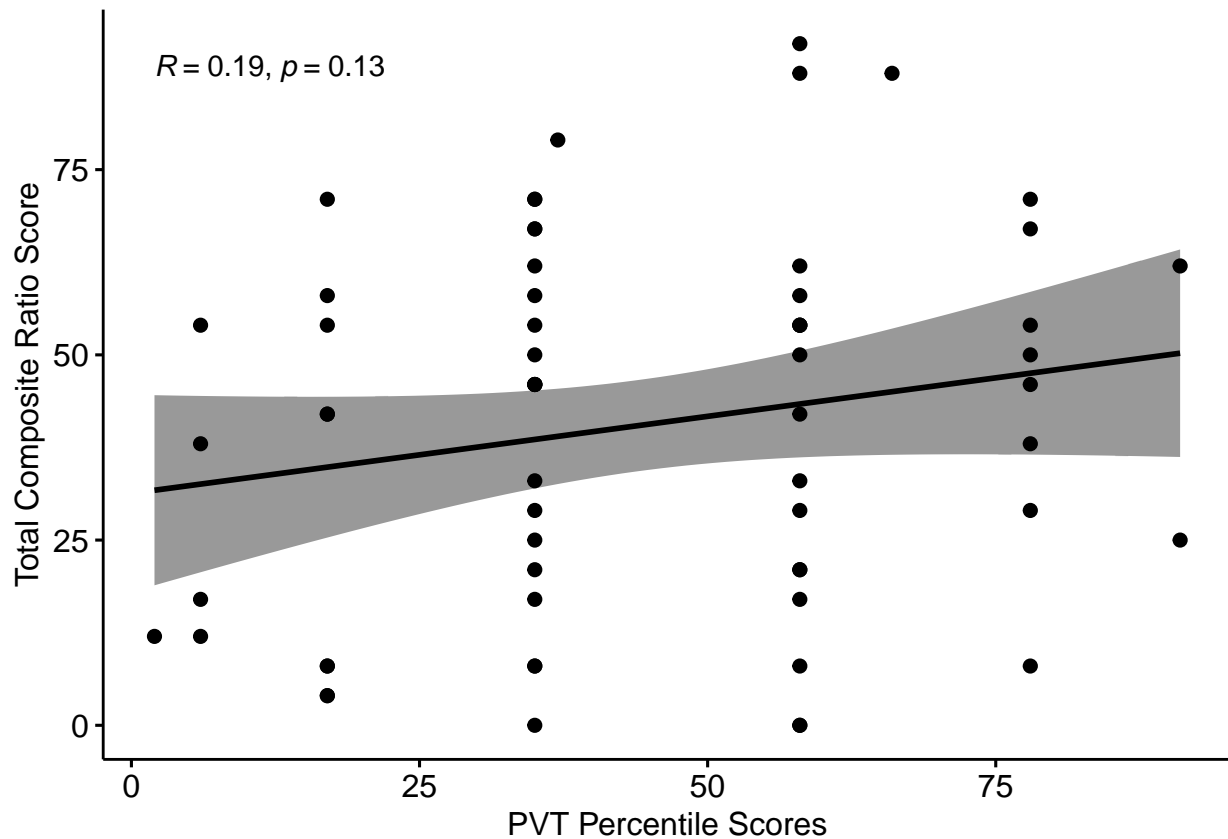
Models

Correlations for Baseline



```
##
## Pearson's product-moment correlation
##
## data:  plan1_pearson_pvt_score$pvt_perc and plan1_pearson_pvt_score$total_comp_ratio_score_1
## t = 1.4869, df = 61, p-value = 0.1422
## alternative hypothesis: true correlation is not equal to 0
## 95 percent confidence interval:
##  -0.06370313  0.41552511
## sample estimates:
##      cor
## 0.1870136
```

Correlations for Test



```
##
## Pearson's product-moment correlation
##
## data: plan1_pearson_pvt_score$pvt_perc and plan1_pearson_pvt_score$total_comp_ratio_score_1
## t = 1.5516, df = 61, p-value = 0.1259
## alternative hypothesis: true correlation is not equal to 0
## 95 percent confidence interval:
## -0.05559485 0.42223456
## sample estimates:
## cor
## 0.1948542
```

T-Test for baseline vs test

```
## # A tibble: 1 x 9
## .y. group1 group2 n1 n2 stati-1 df p p.sig-2
## <chr> <chr> <chr> <int> <int> <dbl> <dbl> <dbl> <chr>
## 1 total_comp_ratio_sco~ Basel~ Test 76 76 -14.9 75 3.84e-24 ****
## # ... with abbreviated variable names 1: statistic, 2: p.signif
```

```
##
## Descriptive statistics by group
## condition: Baseline
## vars n mean sd median trimmed mad
## codenumber 1 76 8461.26 365.24 8473.50 8477.71 343.96
```

```

## condition*          2 76      1.00      0.00      1.00      1.00      0.00
## gender_dummy        3 76      0.50      0.50      0.50      0.50      0.74
## gender*             4 76      1.50      0.50      1.50      1.50      0.74
## bilingual*          5 76      1.71      0.46      2.00      1.76      0.00
## l1*                 6 76      1.79      1.89      1.00      1.29      0.00
## l1_overall          7 76     85.59     16.65     94.35     87.85     8.38
## l2_overall          8 76     12.61     14.19      4.65     10.77     6.89
## l3_overall          9 76      1.47      3.92      0.00      0.39      0.00
## edu_avg            10 75     17.57      1.24     18.00     17.57      1.48
## income             11 76  91378.63 30639.52 91896.00 89531.92 36156.17
## age_mo*           12 76      5.42      2.58      5.00      5.16      1.48
## total_comp_score_1 13 76      0.34      1.33      0.00      0.02      0.00
## total_comp_ratio_score_1 14 76      1.41      5.56      0.00      0.06      0.00
## pvt_perc           15 63     44.03     23.16     35.00     43.86     34.10
## income_c           16 76      0.00 30639.52    517.37 -1846.71 36156.17
## edu_c              17 76      0.00      1.23      0.43      0.00      1.48
## age_c              18 76      0.00      2.66     -0.45     -0.29      1.48
##
##               min      max      range  skew kurtosis      se
## codenumber      7630.00   9163.00   1533.0 -0.49   -0.01   41.90
## condition*        1.00      1.00      0.0   NaN     NaN     0.00
## gender_dummy      0.00      1.00      1.0  0.00   -2.03     0.06
## gender*           1.00      2.00      1.0  0.00   -2.03     0.06
## bilingual*        1.00      2.00      1.0 -0.91   -1.19     0.05
## l1*               1.00      7.00      6.0  2.12    2.80     0.22
## l1_overall        38.60    100.00     61.4 -0.95   -0.25     1.91
## l2_overall         0.00     45.50     45.5  0.82   -0.69     1.63
## l3_overall         0.00     18.80     18.8  3.16    9.66     0.45
## edu_avg           15.00     20.00      5.0 -0.04   -0.71     0.14
## income            44503.00 172442.00 127939.0 0.46   -0.42  3514.59
## age_mo*           1.00     13.00     12.0  1.03    0.85     0.30
## total_comp_score_1 0.00      9.00      9.0  4.84   25.21     0.15
## total_comp_ratio_score_1 0.00     38.00     38.0  4.95   26.33     0.64
## pvt_perc           2.00     91.00     89.0  0.12   -0.92     2.92
## income_c          -46875.63 81063.37 127939.0 0.46   -0.42  3514.59
## edu_c              -2.57      2.43      5.0 -0.04   -0.68     0.14
## age_c              -4.45      8.55     13.0  1.18    1.46     0.31
## -----
## condition: Test
##
##               vars  n      mean      sd      median  trimmed      mad
## codenumber        1 76  8461.26  365.24  8473.50  8477.71  343.96
## condition*         2 76      2.00      0.00      2.00      2.00      0.00
## gender_dummy        3 76      0.50      0.50      0.50      0.50      0.74
## gender*             4 76      1.50      0.50      1.50      1.50      0.74
## bilingual*          5 76      1.71      0.46      2.00      1.76      0.00
## l1*                 6 76      1.79      1.89      1.00      1.29      0.00
## l1_overall          7 76     85.59     16.65     94.35     87.85     8.38
## l2_overall          8 76     12.61     14.19      4.65     10.77     6.89
## l3_overall          9 76      1.47      3.92      0.00      0.39      0.00
## edu_avg            10 75     17.57      1.24     18.00     17.57      1.48
## income             11 76  91378.63 30639.52 91896.00 89531.92 36156.17
## age_mo*           12 76      5.42      2.58      5.00      5.16      1.48
## total_comp_score_1 13 76     10.34      5.76     11.00     10.32     5.93
## total_comp_ratio_score_1 14 76     43.08     24.07     46.00     42.98     24.46
## pvt_perc           15 63     44.03     23.16     35.00     43.86     34.10

```



```
## income_c          16 76      0.00 30639.52   517.37 -1846.71 36156.17
## edu_c             17 76      0.00      1.23     0.43      0.00      1.48
## age_c            18 76      0.00      2.66    -0.45    -0.29      1.48
##                  min      max      range skew kurtosis      se
## codenumber       7630.00  9163.00  1533.0 -0.49    -0.01    41.90
## condition*        2.00      2.00      0.0  NaN      NaN      0.00
## gender_dummy       0.00      1.00      1.0  0.00    -2.03     0.06
## gender*           1.00      2.00      1.0  0.00    -2.03     0.06
## bilingual*         1.00      2.00      1.0 -0.91    -1.19     0.05
## l1*                1.00      7.00      6.0  2.12     2.80     0.22
## l1_overall        38.60    100.00     61.4 -0.95    -0.25     1.91
## l2_overall         0.00     45.50     45.5  0.82    -0.69     1.63
## l3_overall         0.00     18.80     18.8  3.16     9.66     0.45
## edu_avg           15.00     20.00      5.0 -0.04    -0.71     0.14
## income            44503.00 172442.00 127939.0  0.46    -0.42   3514.59
## age_mo*            1.00     13.00     12.0  1.03     0.85     0.30
## total_comp_score_1  0.00     22.00     22.0 -0.09    -0.85     0.66
## total_comp_ratio_score_1 0.00     92.00     92.0 -0.09    -0.83     2.76
## pvt_perc           2.00     91.00     89.0  0.12    -0.92     2.92
## income_c          -46875.63  81063.37 127939.0  0.46    -0.42   3514.59
## edu_c              -2.57      2.43      5.0 -0.04    -0.68     0.14
## age_c              -4.45      8.55     13.0  1.18     1.46     0.31
```

Score 1-Binary

```
##
## Call:
## lm(formula = total_comp_ratio_score_1 ~ bilingual + l3_overall +
##       gender + edu_c + income_c + age_c + pvt_perc, data = ., REML = F)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -40.206 -18.518  -1.351  18.270  49.149
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)   3.337e+01  9.773e+00   3.414  0.00121 **
## bilingualMonolingual -2.699e+00  8.046e+00  -0.336  0.73852
## l3_overall      9.550e-01  8.101e-01   1.179  0.24353
## genderMale     -1.754e+00  7.003e+00  -0.250  0.80317
## edu_c          -2.320e+00  2.776e+00  -0.836  0.40696
## income_c       -6.384e-05  1.192e-04  -0.536  0.59445
## age_c           1.921e+00  1.320e+00   1.455  0.15142
## pvt_perc        1.975e-01  1.379e-01   1.432  0.15790
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 24.47 on 55 degrees of freedom
## (13 observations deleted due to missingness)
## Multiple R-squared:  0.1295, Adjusted R-squared:  0.01873
## F-statistic: 1.169 on 7 and 55 DF,  p-value: 0.3355

## # Comparison of Model Performance Indices
```

```
##
## Name | Model | AIC | AIC weights | BIC | BIC weights | R2 | R2 (adj.) | RMSE
## -----
## rc_1_test_only | lm | 591.107 | 0.078 | 610.395 | 0.003 | 0.130 | 0.019 | 22.863
## rc_2_test_only | lm | 705.935 | 9.09e-27 | 724.581 | 5.44e-28 | 0.102 | 0.024 | 22.649
## rc_3_test_only | lm | 705.091 | 1.39e-26 | 721.406 | 2.66e-27 | 0.089 | 0.024 | 22.822
## rc_4_test_only | lm | 704.547 | 1.82e-26 | 720.862 | 3.49e-27 | 0.095 | 0.031 | 22.740
## rc_5_test_only | lm | 703.484 | 3.10e-26 | 717.468 | 1.91e-26 | 0.084 | 0.032 | 22.881
## rc_6_test_only | lm | 586.173 | 0.922 | 599.032 | 0.997 | 0.115 | 0.054 | 23.058
## rc_7_test_only | lm | 701.491 | 8.39e-26 | 713.145 | 1.66e-25 | 0.084 | 0.046 | 22.882
```

```
##
## Call:
## lm(formula = total_comp_ratio_score_1 ~ bilingual + l3_overall +
##     age_c + pvt_perc, data = ., REML = F)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -43.370 -17.337  -2.923  18.839  49.731
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)    33.3996     8.5992   3.884 0.000266 ***
## bilingualMonolingual -4.0350     7.1960  -0.561 0.577136
## l3_overall       0.8470     0.7839   1.080 0.284416
## age_c           1.9664     1.2773   1.540 0.129103
## pvt_perc         0.2039     0.1348   1.512 0.135849
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 24.03 on 58 degrees of freedom
## (13 observations deleted due to missingness)
## Multiple R-squared:  0.1147, Adjusted R-squared:  0.0536
## F-statistic: 1.878 on 4 and 58 DF, p-value: 0.1265
```

Running the full and final models

```
##
## Call:
## lm(formula = total_comp_ratio_score_1 ~ bilingual + l3_overall +
##     gender + edu_c + income_c + age_c + pvt_perc, data = ., REML = F)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -40.206 -18.518  -1.351  18.270  49.149
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)    3.337e+01  9.773e+00   3.414 0.00121 **
## bilingualMonolingual -2.699e+00  8.046e+00  -0.336 0.73852
## l3_overall       9.550e-01  8.101e-01   1.179 0.24353
## genderMale     -1.754e+00  7.003e+00  -0.250 0.80317
## edu_c         -2.320e+00  2.776e+00  -0.836 0.40696
```

```

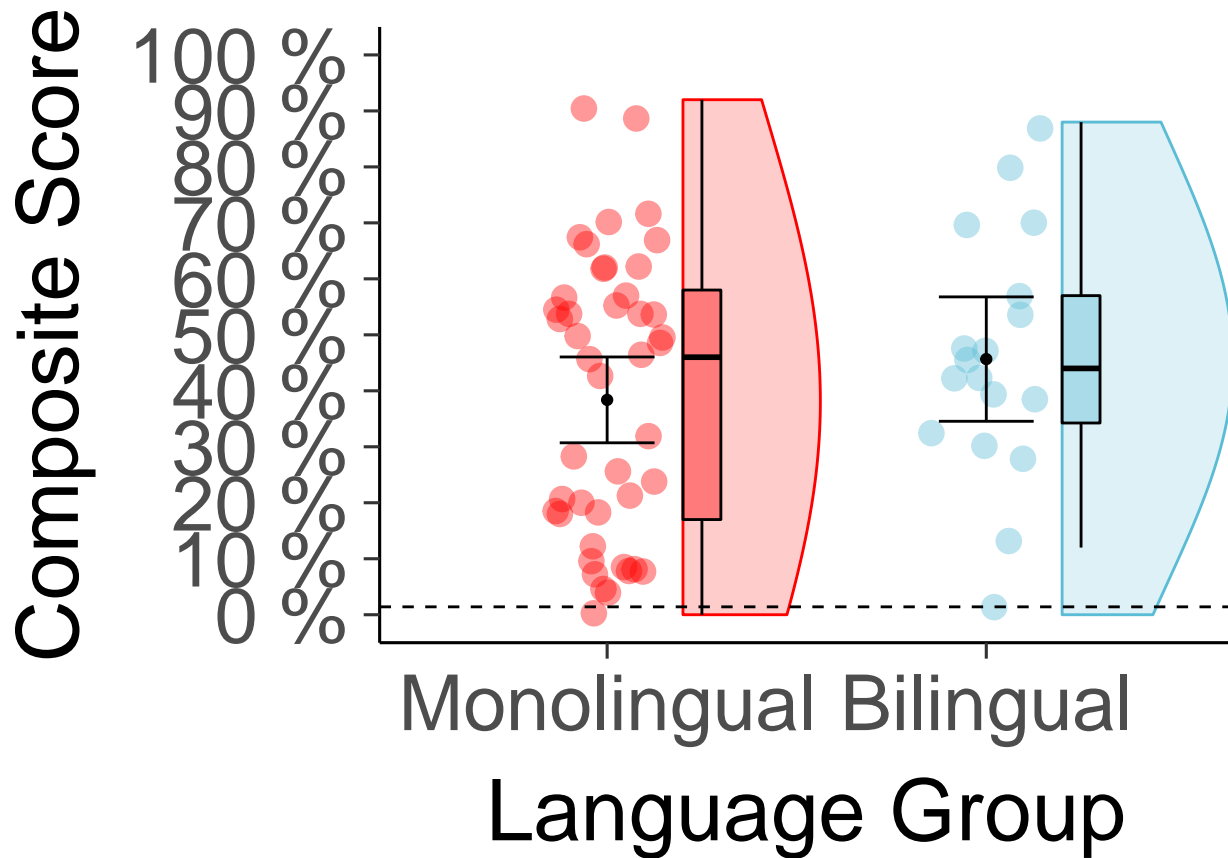
## income_c          -6.384e-05  1.192e-04  -0.536  0.59445
## age_c             1.921e+00  1.320e+00   1.455  0.15142
## pvt_perc          1.975e-01  1.379e-01   1.432  0.15790
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 24.47 on 55 degrees of freedom
## (13 observations deleted due to missingness)
## Multiple R-squared:  0.1295, Adjusted R-squared:  0.01873
## F-statistic: 1.169 on 7 and 55 DF,  p-value: 0.3355

##
## Call:
## lm(formula = total_comp_ratio_score_1 ~ bilingual + l3_overall +
##     age_c + pvt_perc, data = ., REML = F)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -43.370 -17.337  -2.923   18.839   49.731
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)      33.3996     8.5992   3.884 0.000266 ***
## bilingualMonolingual -4.0350     7.1960  -0.561 0.577136
## l3_overall         0.8470     0.7839   1.080 0.284416
## age_c             1.9664     1.2773   1.540 0.129103
## pvt_perc          0.2039     0.1348   1.512 0.135849
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 24.03 on 58 degrees of freedom
## (13 observations deleted due to missingness)
## Multiple R-squared:  0.1147, Adjusted R-squared:  0.0536
## F-statistic: 1.878 on 4 and 58 DF,  p-value: 0.1265

```

Table Summary

Graph



T-Test PVT

```
## # A tibble: 1 x 9
##   .y.      group1      group2      n1      n2 statistic    df      p p.signif
##   <chr>    <chr>    <chr>    <int> <int>    <dbl> <dbl> <dbl> <chr>
## 1 pvt_perc Monolingual Bilingual    54    22    0.651  29.9  0.52 ns
```

Score 1-LPA

Models

```
##
## Call:
## lm(formula = total_comp_ratio_score_1 ~ profiles + l3_overall +
##     gender + edu_c + income_c + age_c + pvt_perc, data = ., REML = F)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -38.753 -16.728  -2.132   21.059   51.693
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)  2.731e+01  8.246e+00   3.311  0.00166 **
## profilesMedium 1.181e+01  8.014e+00   1.473  0.14648
```

```
## profilesHigh      3.847e+00  1.121e+01   0.343  0.73279
## l3_overall        8.291e-01  8.966e-01   0.925  0.35926
## genderMale       -2.607e+00  6.914e+00  -0.377  0.70766
## edu_c            -2.730e+00  2.764e+00  -0.988  0.32768
## income_c         -6.344e-05  1.127e-04  -0.563  0.57570
## age_c            1.511e+00  1.333e+00   1.133  0.26219
## pvt_perc         2.259e-01  1.379e-01   1.638  0.10719
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 24.23 on 54 degrees of freedom
## (13 observations deleted due to missingness)
## Multiple R-squared:  0.1621, Adjusted R-squared:  0.03792
## F-statistic: 1.305 on 8 and 54 DF,  p-value: 0.2607
```

Comparison of Model Performance Indices

```
##
## Name          | Model |      AIC | AIC weights |      BIC | BIC weights |      R2 | R2 (adj.) |      RMSE
## -----
## rc_1_test_only |   lm | 590.706 |      0.093 | 612.138 |      0.004 | 0.162 |      0.038 | 22.432
## rc_2_test_only |   lm | 705.918 |     8.96e-27 | 726.895 |     4.96e-28 | 0.126 |      0.036 | 22.350
## rc_3_test_only |   lm | 705.256 |     1.25e-26 | 723.901 |     2.22e-27 | 0.110 |      0.033 | 22.548
## rc_4_test_only |   lm | 704.592 |     1.74e-26 | 723.238 |     3.09e-27 | 0.118 |      0.041 | 22.450
## rc_5_test_only |   lm | 703.683 |     2.74e-26 | 719.998 |     1.56e-26 | 0.105 |      0.042 | 22.611
## rc_6_test_only |   lm | 586.161 |      0.907 | 601.163 |      0.996 | 0.142 |      0.067 | 22.692
## rc_7_test_only |   lm | 701.713 |     7.34e-26 | 715.697 |     1.34e-25 | 0.105 |      0.055 | 22.616
```

```
##
## Call:
## lm(formula = total_comp_ratio_score_1 ~ profiles + l3_overall +
##       gender + edu_c + income_c + age_c + pvt_perc, data = ., REML = F)
##
```

```
## Residuals:
##      Min       1Q   Median       3Q      Max
## -38.753 -16.728  -2.132   21.059   51.693
##
```

```
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)  2.731e+01  8.246e+00   3.311  0.00166 **
## profilesMedium 1.181e+01  8.014e+00   1.473  0.14648
## profilesHigh   3.847e+00  1.121e+01   0.343  0.73279
## l3_overall     8.291e-01  8.966e-01   0.925  0.35926
## genderMale    -2.607e+00  6.914e+00  -0.377  0.70766
## edu_c        -2.730e+00  2.764e+00  -0.988  0.32768
## income_c     -6.344e-05  1.127e-04  -0.563  0.57570
## age_c         1.511e+00  1.333e+00   1.133  0.26219
## pvt_perc      2.259e-01  1.379e-01   1.638  0.10719
## ---
```

```
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 24.23 on 54 degrees of freedom
## (13 observations deleted due to missingness)
## Multiple R-squared:  0.1621, Adjusted R-squared:  0.03792
## F-statistic: 1.305 on 8 and 54 DF,  p-value: 0.2607
```

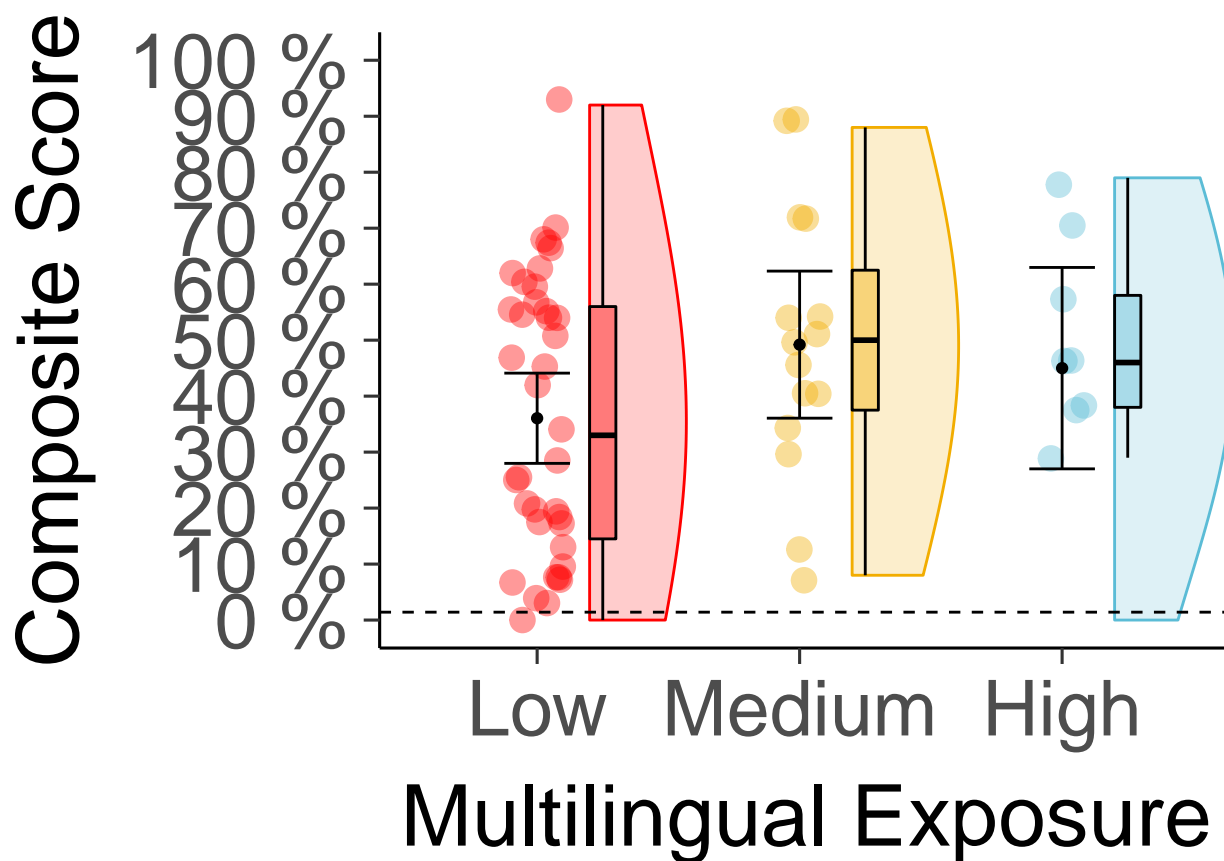
Running the full and final models

```
##
## Call:
## lm(formula = total_comp_ratio_score_1 ~ profiles + l3_overall +
##      gender + edu_c + income_c + age_c + pvt_perc, data = ., REML = F)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -38.753 -16.728  -2.132   21.059   51.693
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)   2.731e+01  8.246e+00   3.311  0.00166 **
## profilesMedium 1.181e+01  8.014e+00   1.473  0.14648
## profilesHigh   3.847e+00  1.121e+01   0.343  0.73279
## l3_overall     8.291e-01  8.966e-01   0.925  0.35926
## genderMale    -2.607e+00  6.914e+00  -0.377  0.70766
## edu_c         -2.730e+00  2.764e+00  -0.988  0.32768
## income_c      -6.344e-05  1.127e-04  -0.563  0.57570
## age_c          1.511e+00  1.333e+00   1.133  0.26219
## pvt_perc       2.259e-01  1.379e-01   1.638  0.10719
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 24.23 on 54 degrees of freedom
## (13 observations deleted due to missingness)
## Multiple R-squared:  0.1621, Adjusted R-squared:  0.03792
## F-statistic: 1.305 on 8 and 54 DF,  p-value: 0.2607

##
## Call:
## lm(formula = total_comp_ratio_score_1 ~ profiles + l3_overall +
##      age_c + pvt_perc, data = ., REML = F)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -42.787 -16.386  -2.475   20.415   51.672
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)   26.1113     7.5704   3.449  0.00106 **
## profilesMedium 11.4023     7.7440   1.472  0.14641
## profilesHigh   4.7760    10.5342   0.453  0.65200
## l3_overall     0.7186     0.8708   0.825  0.41270
## age_c          1.6106     1.2934   1.245  0.21814
## pvt_perc       0.2298     0.1352   1.700  0.09455 .
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 23.86 on 57 degrees of freedom
## (13 observations deleted due to missingness)
## Multiple R-squared:  0.1425, Adjusted R-squared:  0.06728
## F-statistic: 1.894 on 5 and 57 DF,  p-value: 0.1095
```

Table Summary

Graph



Correlations & Anova

```
##
## Descriptive statistics by group
## group: Low
##
```

	vars	n	mean	sd	median	trimmed	mad
## codenumber	1	45	8444.60	355.28	8481.00	8469.59	302.45
## condition*	2	45	1.00	0.00	1.00	1.00	0.00
## gender_dummy	3	45	0.53	0.50	1.00	0.54	0.00
## gender*	4	45	1.47	0.50	1.00	1.46	0.00
## bilingual*	5	45	1.00	0.00	1.00	1.00	0.00
## l1*	6	45	1.00	0.00	1.00	1.00	0.00
## l1_overall	7	45	97.56	3.49	99.00	98.19	1.48
## l2_overall	8	45	2.19	3.02	1.00	1.61	1.48
## l3_overall	9	45	0.18	0.52	0.00	0.04	0.00
## edu_avg	10	45	17.53	1.29	17.00	17.51	1.48
## income	11	45	94323.09	27557.80	93394.00	93979.41	32507.49
## age_mo*	12	45	4.18	1.93	4.00	4.00	1.48
## total_comp_score_1	13	45	0.13	0.55	0.00	0.00	0.00
## total_comp_ratio_score_1	14	45	0.53	2.19	0.00	0.00	0.00
## pvt_perc	15	39	46.85	22.88	35.00	46.94	34.10

```

## income_c          16 45  2944.46 27557.80  2015.37  2600.78 32507.49
## edu_c             17 45   -0.04   1.29   -0.57   -0.06   1.48
## age_c             18 45   -0.23   2.07   -0.45   -0.45   1.48
## profiles*        19 45    1.00    0.00    1.00    1.00    0.00
##                   min      max    range skew kurtosis    se
## codenumber       7630.00  9162.00  1532.0 -0.68    0.29   52.96
## condition*        1.00    1.00    0.0   NaN     NaN    0.00
## gender_dummy      0.00    1.00    1.0 -0.13   -2.03   0.08
## gender*           1.00    2.00    1.0  0.13   -2.03   0.08
## bilingual*        1.00    1.00    0.0   NaN     NaN    0.00
## l1*               1.00    1.00    0.0   NaN     NaN    0.00
## l1_overall        88.90   100.00   11.1 -1.38    0.60   0.52
## l2_overall         0.00    10.50   10.5  1.47    1.14   0.45
## l3_overall         0.00     2.50    2.5  3.10    9.36   0.08
## edu_avg           15.00    20.00    5.0  0.08   -0.78   0.19
## income            44503.00 154495.00 109992.0 0.02   -0.59 4108.07
## age_mo*           1.00     9.00    8.0  0.84   -0.29   0.29
## total_comp_score_1 0.00     3.00    3.0  4.14   16.81   0.08
## total_comp_ratio_score_1 0.00    12.00   12.0  4.14   16.81   0.33
## pvt_perc          6.00    91.00   85.0  0.07   -0.80   3.66
## income_c          -46875.63 63116.37 109992.0 0.02   -0.59 4108.07
## edu_c             -2.57     2.43    5.0  0.08   -0.78   0.19
## age_c             -3.45     6.55   10.0  1.15    0.96   0.31
## profiles*         1.00     1.00    0.0   NaN     NaN    0.00
## -----
## group: Medium
##                   vars  n    mean      sd    median  trimmed    mad
## codenumber         1 21  8450.57  382.00   8431.00  8449.82  314.31
## condition*         2 21    1.00    0.00    1.00    1.00    0.00
## gender_dummy       3 21    0.43    0.51    0.00    0.41    0.00
## gender*            4 21    1.57    0.51    2.00    1.59    0.00
## bilingual*         5 21    1.57    0.51    2.00    1.59    0.00
## l1*                6 21    2.19    1.94    1.00    1.88    0.00
## l1_overall         7 21    74.95    6.81   76.00   75.06    8.90
## l2_overall         8 21    22.60    6.00   21.50   22.28    5.49
## l3_overall         9 21     2.10    4.12    0.00    1.16    0.00
## edu_avg           10 20   17.55    1.32   18.00   17.56    1.48
## income             11 21  90640.57 40294.89 72144.00 86860.29 35389.66
## age_mo*           12 21     4.76    2.53    4.00    4.65    1.48
## total_comp_score_1 13 21     0.95    2.33    0.00    0.29    0.00
## total_comp_ratio_score_1 14 21    3.95    9.79    0.00    1.18    0.00
## pvt_perc          15 15    39.20   24.91   35.00   39.08   26.69
## income_c          16 21  -738.06 40294.89 -19234.63 -4518.34 35389.66
## edu_c             17 21   -0.02    1.28    0.43   -0.01    1.48
## age_c             18 21     0.65    3.32   -0.45    0.49    1.48
## profiles*         19 21     2.00    0.00    2.00    2.00    0.00
##                   min      max    range skew kurtosis    se
## codenumber       7760.00  9163.00  1403.0 -0.12   -0.59   83.36
## condition*        1.00    1.00    0.0   NaN     NaN    0.00
## gender_dummy      0.00    1.00    1.0  0.27   -2.02   0.11
## gender*           1.00    2.00    1.0 -0.27   -2.02   0.11
## bilingual*        1.00    2.00    1.0 -0.27   -2.02   0.11
## l1*               1.00    6.00    5.0  1.12   -0.53   0.42
## l1_overall        64.50    84.50   20.0 -0.27   -1.47   1.49

```



```

## l2_overall      14.50      33.50      19.0  0.40      -1.15      1.31
## l3_overall      0.00      14.90      14.9  1.81       2.23      0.90
## edu_avg         15.00      20.00       5.0 -0.10      -1.01      0.29
## income          44503.00 172442.00 127939.0 0.64      -1.06 8793.07
## age_mo*         1.00      10.00       9.0  0.43      -0.86      0.55
## total_comp_score_1 0.00       9.00       9.0  2.41       4.82      0.51
## total_comp_ratio_score_1 0.00      38.00      38.0  2.45       5.02      2.14
## pvt_perc        2.00      78.00      76.0  0.21      -1.52      6.43
## income_c        -46875.63 81063.37 127939.0 0.64      -1.06 8793.07
## edu_c           -2.57       2.43       5.0 -0.11      -0.90      0.28
## age_c           -4.45       8.55      13.0  0.56      -0.40      0.72
## profiles*       2.00       2.00       0.0  NaN       NaN      0.00
## -----
## group: High
##               vars  n      mean      sd      median      trimmed
## codenumber      1 10   8558.70   397.58   8640.00   8595.38
## condition*      2 10     1.00     0.00     1.00     1.00
## gender_dummy    3 10     0.50     0.53     0.50     0.50
## gender*         4 10     1.50     0.53     1.50     1.50
## bilingual*      5 10     2.00     0.00     2.00     2.00
## l1*             6 10     2.50     1.43     2.50     2.50
## l1_overall      7 10    54.04     7.80    56.70    55.04
## l2_overall      8 10    38.49     5.83    39.15    38.96
## l3_overall      9 10     5.98     7.58     2.90     5.12
## edu_avg        10 10    17.80     0.92    18.00    17.88
## income         11 10   79678.50 17478.34 75668.50 80058.50
## age_mo*        12 10     3.40     1.51     3.50     3.38
## total_comp_score_1 13 10     0.00     0.00     0.00     0.00
## total_comp_ratio_score_1 14 10     0.00     0.00     0.00     0.00
## pvt_perc       15  9    39.89    21.97    35.00    39.89
## income_c       16 10 -11700.13 17478.34 -15710.13 -11320.13
## edu_c          17 10     0.23     0.92     0.43     0.30
## age_c          18 10    -0.35     3.51    -0.95    -0.95
## profiles*      19 10     3.00     0.00     3.00     3.00
##               mad      min      max      range      skew      kurtosis
## codenumber     285.40   7768.00   9056.00  1288.0 -0.55    -0.77
## condition*      0.00     1.00     1.00     0.0  NaN     NaN
## gender_dummy    0.74     0.00     1.00     1.0  0.00   -2.19
## gender*         0.74     1.00     2.00     1.0  0.00   -2.19
## bilingual*      0.00     2.00     2.00     0.0  NaN     NaN
## l1*             2.22     1.00     4.00     3.0  0.00   -2.04
## l1_overall      6.08    38.60    61.50    22.9 -0.78   -0.92
## l2_overall      4.89    27.70    45.50    17.8 -0.61   -1.02
## l3_overall      4.30     0.00    18.80    18.8  0.79   -1.18
## edu_avg         0.74    16.00    19.00     3.0 -0.43   -0.83
## income        24047.03 54979.00 101338.00 46359.0 0.08   -1.82
## age_mo*         1.48     1.00     6.00     5.0  0.08   -1.18
## total_comp_score_1 0.00     0.00     0.00     0.0  NaN     NaN
## total_comp_ratio_score_1 0.00     0.00     0.00     0.0  NaN     NaN
## pvt_perc       26.69     6.00    78.00    72.0  0.17   -1.13
## income_c       24047.03 -36399.63 9959.37 46359.0 0.08   -1.82
## edu_c          0.74    -1.57     1.43     3.0 -0.43   -0.83
## age_c          1.48    -4.45     8.55    13.0  1.44    1.35
## profiles*      0.00     3.00     3.00     0.0  NaN     NaN

```

```

##                               se
## codenumber                   125.73
## condition*                   0.00
## gender_dummy                 0.17
## gender*                      0.17
## bilingual*                   0.00
## l1*                          0.45
## l1_overall                   2.47
## l2_overall                   1.84
## l3_overall                   2.40
## edu_avg                      0.29
## income                       5527.14
## age_mo*                      0.48
## total_comp_score_1           0.00
## total_comp_ratio_score_1     0.00
## pvt_perc                     7.32
## income_c                     5527.14
## edu_c                        0.29
## age_c                        1.11
## profiles*                    0.00

##           Df Sum Sq Mean Sq F value Pr(>F)
## profiles    2    814   406.8    0.752  0.476
## Residuals   60  32438   540.6
## 13 observations deleted due to missingness

##
## Pearson's product-moment correlation
##
## data:  plan1_plus_lpa_for_anova$pvt_perc and plan1_plus_lpa_for_anova$l2_overall
## t = -0.84499, df = 61, p-value = 0.4014
## alternative hypothesis: true correlation is not equal to 0
## 95 percent confidence interval:
##  -0.3461032  0.1440420
## sample estimates:
##           cor
## -0.1075618

```

Score 1-Continuous

```

##
## Call:
## lm(formula = total_comp_ratio_score_1 ~ l2_overall + l3_overall +
##      gender + edu_c + income_c + age_c + pvt_perc, data = ., REML = F)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -42.292 -18.233  -2.983   17.877   49.971
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept) 29.8442869   8.2918843   3.599 0.000685 ***
## l2_overall   0.1314081   0.2534059   0.519 0.606142

```

```

## l3_overall    0.8783761  0.8283940   1.060 0.293626
## genderMale   -1.7738708  6.9324654  -0.256 0.798999
## edu_c        -2.3825172  2.7757924  -0.858 0.394441
## income_c     -0.0000626  0.0001139  -0.550 0.584752
## age_c         1.8907796  1.3152902   1.438 0.156231
## pvt_perc      0.2003053  0.1377870   1.454 0.151703
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 24.43 on 55 degrees of freedom
## (13 observations deleted due to missingness)
## Multiple R-squared:  0.132, Adjusted R-squared:  0.02151
## F-statistic: 1.195 on 7 and 55 DF,  p-value: 0.3213

## # Comparison of Model Performance Indices
##
## Name          | Model |      AIC | AIC weights |      BIC | BIC weights |      R2 | R2 (adj.) |      RMSE
## -----
## rc_1_test_only | lm | 590.928 |      0.080 | 610.217 |      0.003 | 0.132 | 0.022 | 22.831
## rc_2_test_only | lm | 705.849 | 8.91e-27 | 724.495 | 5.34e-28 | 0.103 | 0.026 | 22.636
## rc_3_test_only | lm | 705.093 | 1.30e-26 | 721.408 | 2.50e-27 | 0.089 | 0.024 | 22.822
## rc_4_test_only | lm | 704.501 | 1.75e-26 | 720.816 | 3.36e-27 | 0.096 | 0.031 | 22.733
## rc_5_test_only | lm | 703.514 | 2.86e-26 | 717.498 | 1.77e-26 | 0.084 | 0.032 | 22.885
## rc_6_test_only | lm | 586.050 |      0.920 | 598.909 |      0.997 | 0.116 | 0.055 | 23.035
## rc_7_test_only | lm | 701.522 | 7.75e-26 | 713.176 | 1.53e-25 | 0.084 | 0.045 | 22.887

##
## Call:
## lm(formula = total_comp_ratio_score_1 ~ l2_overall + l3_overall +
##     gender + edu_c + income_c + age_c + pvt_perc, data = ., REML = F)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -42.292 -18.233  -2.983  17.877  49.971
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept) 29.8442869   8.2918843   3.599 0.000685 ***
## l2_overall   0.1314081   0.2534059   0.519 0.606142
## l3_overall   0.8783761   0.8283940   1.060 0.293626
## genderMale  -1.7738708   6.9324654  -0.256 0.798999
## edu_c       -2.3825172   2.7757924  -0.858 0.394441
## income_c    -0.0000626   0.0001139  -0.550 0.584752
## age_c        1.8907796   1.3152902   1.438 0.156231
## pvt_perc     0.2003053   0.1377870   1.454 0.151703
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 24.43 on 55 degrees of freedom
## (13 observations deleted due to missingness)
## Multiple R-squared:  0.132, Adjusted R-squared:  0.02151
## F-statistic: 1.195 on 7 and 55 DF,  p-value: 0.3213

```

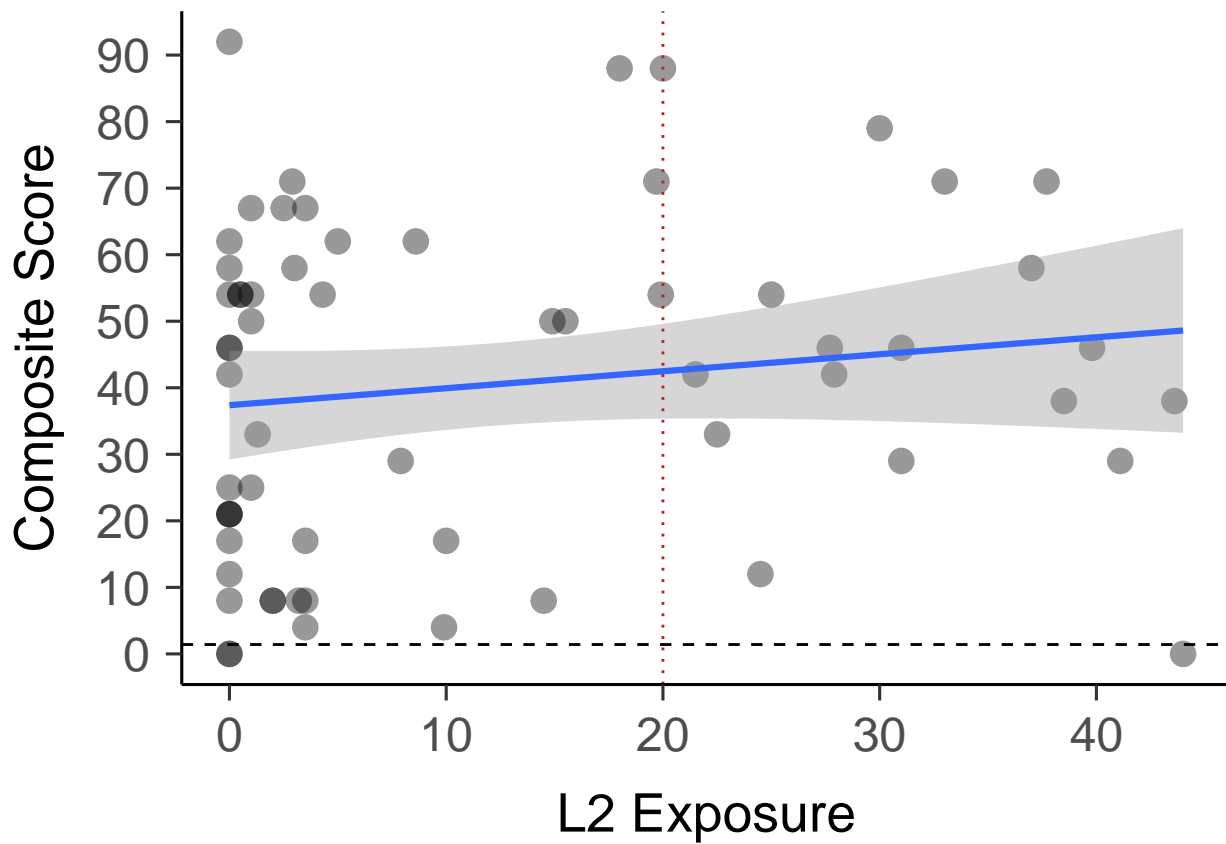
Running the full and final models

```
##
## Call:
## lm(formula = total_comp_ratio_score_1 ~ l2_overall + l3_overall +
##     gender + edu_c + income_c + age_c + pvt_perc, data = ., REML = F)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -42.292 -18.233  -2.983  17.877  49.971
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)  29.8442869   8.2918843   3.599 0.000685 ***
## l2_overall    0.1314081   0.2534059   0.519 0.606142
## l3_overall    0.8783761   0.8283940   1.060 0.293626
## genderMale   -1.7738708   6.9324654  -0.256 0.798999
## edu_c        -2.3825172   2.7757924  -0.858 0.394441
## income_c     -0.0000626   0.0001139  -0.550 0.584752
## age_c         1.8907796   1.3152902   1.438 0.156231
## pvt_perc      0.2003053   0.1377870   1.454 0.151703
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 24.43 on 55 degrees of freedom
## (13 observations deleted due to missingness)
## Multiple R-squared:  0.132, Adjusted R-squared:  0.02151
## F-statistic: 1.195 on 7 and 55 DF,  p-value: 0.3213

##
## Call:
## lm(formula = total_comp_ratio_score_1 ~ l2_overall + l3_overall +
##     age_c + pvt_perc, data = ., REML = F)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -45.362 -16.927  -2.412  18.600  50.321
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)  28.6563     7.5033   3.819 0.000328 ***
## l2_overall    0.1551     0.2369   0.655 0.515115
## l3_overall    0.7822     0.8055   0.971 0.335513
## age_c         1.9602     1.2731   1.540 0.129064
## pvt_perc      0.2059     0.1348   1.528 0.131987
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 24.01 on 58 degrees of freedom
## (13 observations deleted due to missingness)
## Multiple R-squared:  0.1164, Adjusted R-squared:  0.05545
## F-statistic:  1.91 on 4 and 58 DF,  p-value: 0.1209
```

Table Summary

Graph



Corr PVT & L2

```
##
## Pearson's product-moment correlation
##
## data:  plan1_test_only$pvt_perc and plan1_test_only$l2_overall
## t = -0.84499, df = 61, p-value = 0.4014
## alternative hypothesis: true correlation is not equal to 0
## 95 percent confidence interval:
##  -0.3461032  0.1440420
## sample estimates:
##          cor
## -0.1075618
```

#2: All children who had valid poses [aka Approach 2]

In this analysis I include all children with all their valid trials. - score_1 = totalsteps + totalpairs

Centering education and income

Score 1 Descriptives

```
##               item group1  group2 vars  n  mean  sd median
## total_comp_score_11      1    0 baseline    1 276 0.083 0.40    0
## total_comp_score_12      2    1 baseline    1 124 0.121 0.52    0
## total_comp_score_13      3    0 test      1 247 2.368 2.15    2
## total_comp_score_14      4    1 test      1 108 2.620 2.27    3
## total_comp_ratio_score_11  5    0 baseline    2 276 1.514 7.40    0
## total_comp_ratio_score_12  6    1 baseline    2 124 2.250 9.54    0
## total_comp_ratio_score_13  7    0 test      2 247 42.478 36.15   40
## total_comp_ratio_score_14  8    1 test      2 108 46.120 36.92   43
##               trimmed  mad min max range skew kurtosis  se
## total_comp_score_11      0.0 0.0 0 3 3 5.26 29.058 0.024
## total_comp_score_12      0.0 0.0 0 3 3 4.65 21.483 0.047
## total_comp_score_13      2.1 1.5 0 9 9 0.78 0.041 0.137
## total_comp_score_14      2.4 3.0 0 9 9 0.69 -0.066 0.218
## total_comp_ratio_score_11  0.0 0.0 0 60 60 5.64 34.378 0.446
## total_comp_ratio_score_12  0.0 0.0 0 60 60 4.61 21.843 0.857
## total_comp_ratio_score_13 40.7 46.0 0 100 100 0.30 -1.246 2.300
## total_comp_ratio_score_14 45.2 59.3 0 100 100 0.19 -1.314 3.552

##               item  group1 vars  n  mean  sd median trimmed
## total_comp_score_11      1 baseline    1 400 0.095 0.44    0 0.0
## total_comp_score_12      2 test      1 355 2.445 2.19    3 2.2
## total_comp_ratio_score_11  3 baseline    2 400 1.742 8.12    0 0.0
## total_comp_ratio_score_12  4 test      2 355 43.586 36.37   40 42.0
##               mad min max range skew kurtosis  se
## total_comp_score_11      0 0 3 3 5.13 27.181 0.022
## total_comp_score_12      3 0 9 9 0.76 0.033 0.116
## total_comp_ratio_score_11  0 0 60 60 5.29 29.745 0.406
## total_comp_ratio_score_12 56 0 100 100 0.27 -1.259 1.930
```

Demographics

```
## # A tibble: 5 x 2
## # Groups:   race [5]
##   race      n
##   <chr> <int>
## 1 aa      1
## 2 am      4
## 3 mixed   17
## 4 w      76
## 5 <NA>    3

## # A tibble: 4 x 2
## # Groups:   latinx [4]
##   latinx      n
##   <chr>    <int>
## 1 0        80
## 2 1        19
## 3 999       1
## 4 no 36mo demo 1

##
## Descriptive statistics by group
```

```

## group: 0
##      vars  n    mean    sd    min    max    range    se
## edu_avg    1 70    17.56    1.38    14.0    20.0     6.0    0.16
## income      2 70 97388.74 30296.48 44503.0 172442.0 127939.0 3621.12
## l1_overall  3 70    94.57    7.74    64.5    100.0    35.5    0.92
## l2_overall  4 70     4.81    6.45     0.0    19.9    19.9    0.77
## l3_overall  5 70     0.48    2.02     0.0    14.9    14.9    0.24
## age_mo      6 70    39.44    2.45    35.0    48.0    13.0    0.29
## pvt_perc    7 56    45.21   23.83     1.0    91.0    90.0    3.18
## -----
## group: 1
##      vars  n    mean    sd    min    max    range    se
## edu_avg    1 31    17.60    1.31    15.0    20.0     5.0    0.23
## income      2 31 85584.16 29705.95 47996.0 161886.0 113890.0 5335.35
## l1_overall  3 31    62.70   11.39    38.6    80.0    41.4    2.05
## l2_overall  4 31    32.60    8.19    20.0    45.5    25.5    1.47
## l3_overall  5 31     3.29    5.92     0.0    18.8    18.8    1.06
## age_mo      6 31    39.52    2.77    35.0    48.0    13.0    0.50
## pvt_perc    7 24    37.54   23.48     2.0    78.0    76.0    4.79

##      vars  n    mean    sd    min    max    range    se
## edu_avg    1 70    17.56    1.38    14.0    20.0     6.0    0.16
## income      2 70 97388.74 30296.48 44503.0 172442.0 127939.0 3621.12
## l1_overall  3 70    94.57    7.74    64.5    100.0    35.5    0.92
## l2_overall  4 70     4.81    6.45     0.0    19.9    19.9    0.77
## l3_overall  5 70     0.48    2.02     0.0    14.9    14.9    0.24
## age_mo      6 70    39.44    2.45    35.0    48.0    13.0    0.29
## pvt_perc    7 56    45.21   23.83     1.0    91.0    90.0    3.18

##      vars  n    mean    sd    min    max    range    se
## edu_avg    1 31    17.60    1.31    15.0    20.0     5.0    0.23
## income      2 31 85584.16 29705.95 47996.0 161886.0 113890.0 5335.35
## l1_overall  3 31    62.70   11.39    38.6    80.0    41.4    2.05
## l2_overall  4 31    32.60    8.19    20.0    45.5    25.5    1.47
## l3_overall  5 31     3.29    5.92     0.0    18.8    18.8    1.06
## age_mo      6 31    39.52    2.77    35.0    48.0    13.0    0.50
## pvt_perc    7 24    37.54   23.48     2.0    78.0    76.0    4.79

```

Correlation Maps

```

##          l1_overall  l2_overall  l3_overall  edu_avg
## l1_overall          0.000000e+00 4.393096e-175 1.056481e-37 0.455347290
## l2_overall          4.393096e-175 0.000000e+00 4.350887e-11 0.543121325
## l3_overall          1.056481e-37 4.350887e-11 0.000000e+00 0.283437346
## edu_avg            4.553473e-01 5.431213e-01 2.834373e-01 0.000000000
## income             1.497531e-03 3.329999e-03 9.658828e-02 0.002098892
## total_comp_score_1  3.850353e-01 4.138825e-01 1.733269e-01 0.423062810
## total_comp_ratio_score_1 4.550791e-01 4.313331e-01 3.185323e-01 0.365190637
## age_mo             6.667357e-01 6.261275e-01 9.957637e-01 0.141678081
## pvt_perc           1.651124e-03 1.088958e-02 1.532714e-03 0.472615255
##          income total_comp_score_1
## l1_overall          0.001497531      3.850353e-01
## l2_overall          0.003329999      4.138825e-01

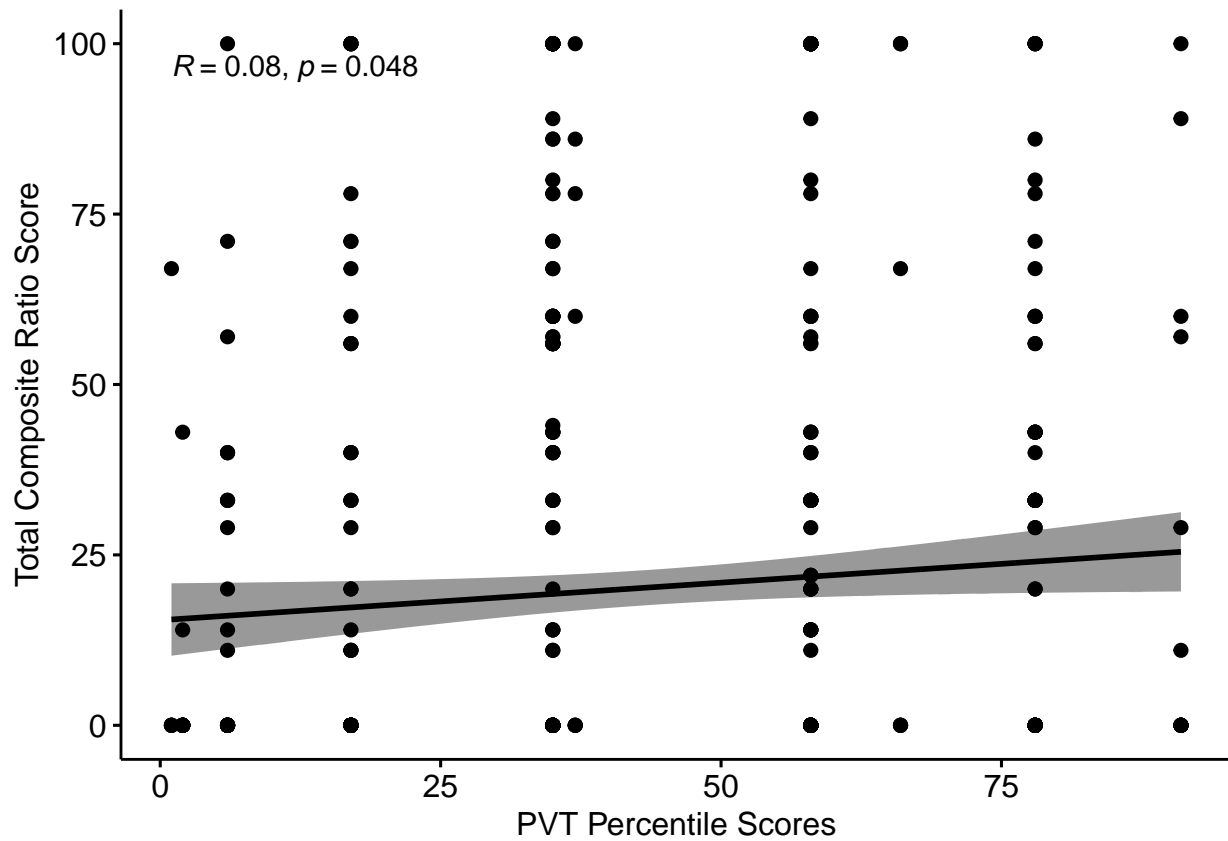
```

```
## l3_overall          0.096588282      1.733269e-01
## edu_avg             0.002098892      4.230628e-01
## income              0.000000000      2.507412e-01
## total_comp_score_1  0.250741161      0.000000e+00
## total_comp_ratio_score_1 0.296781511      7.484638e-80
## age_mo              0.879138160      5.544018e-03
## pvt_perc            0.539504273      4.401134e-02
##                    total_comp_ratio_score_1    age_mo    pvt_perc
## l1_overall          4.550791e-01 0.666735722 0.001651124
## l2_overall          4.313331e-01 0.626127471 0.010889582
## l3_overall          3.185323e-01 0.995763725 0.001532714
## edu_avg             3.651906e-01 0.141678081 0.472615255
## income              2.967815e-01 0.879138160 0.539504273
## total_comp_score_1  7.484638e-80 0.005544018 0.044011344
## total_comp_ratio_score_1 0.000000e+00 0.017666649 0.049189705
## age_mo              1.766665e-02 0.000000000 0.044164029
## pvt_perc            4.918971e-02 0.044164029 0.000000000
```

t-tests for demo

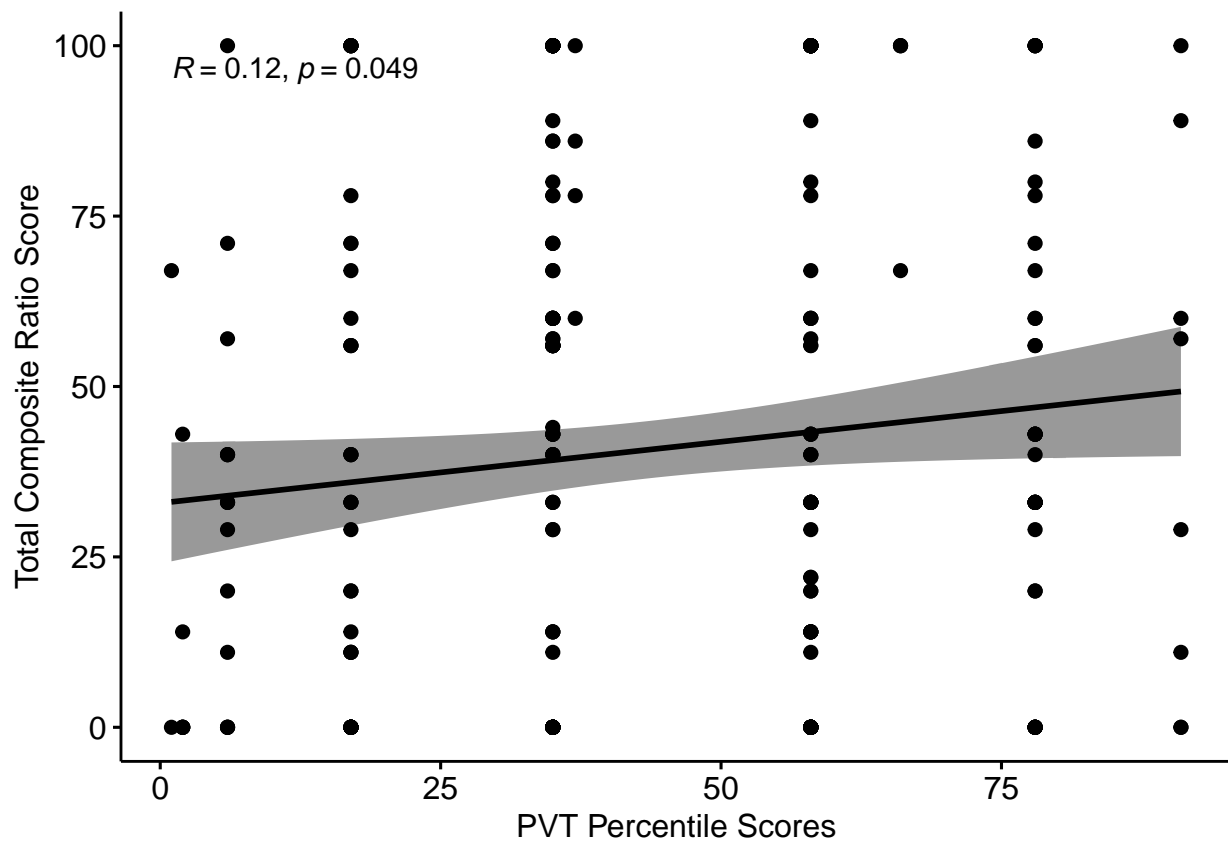
```
## # A tibble: 8 x 5
##   variable      statistic      df      p p.signif
##   <chr>         <dbl> <dbl>    <dbl> <chr>
## 1 age_mo        -0.127   51.8 8.99e- 1 ns
## 2 edu_avg        -0.146   60.5 8.84e- 1 ns
## 3 gender_dummy    0.744   57.8 4.6 e- 1 ns
## 4 income          1.83    58.6 7.22e- 2 ns
## 5 l1_overall     14.2    42.7 8.71e-18 ****
## 6 l2_overall    -16.7    47.2 1.77e-21 ****
## 7 l3_overall     -2.58   33.1 1.46e- 2 *
## 8 pvt_perc        1.33   44.2 1.89e- 1 ns
```

Correlations for Baseline

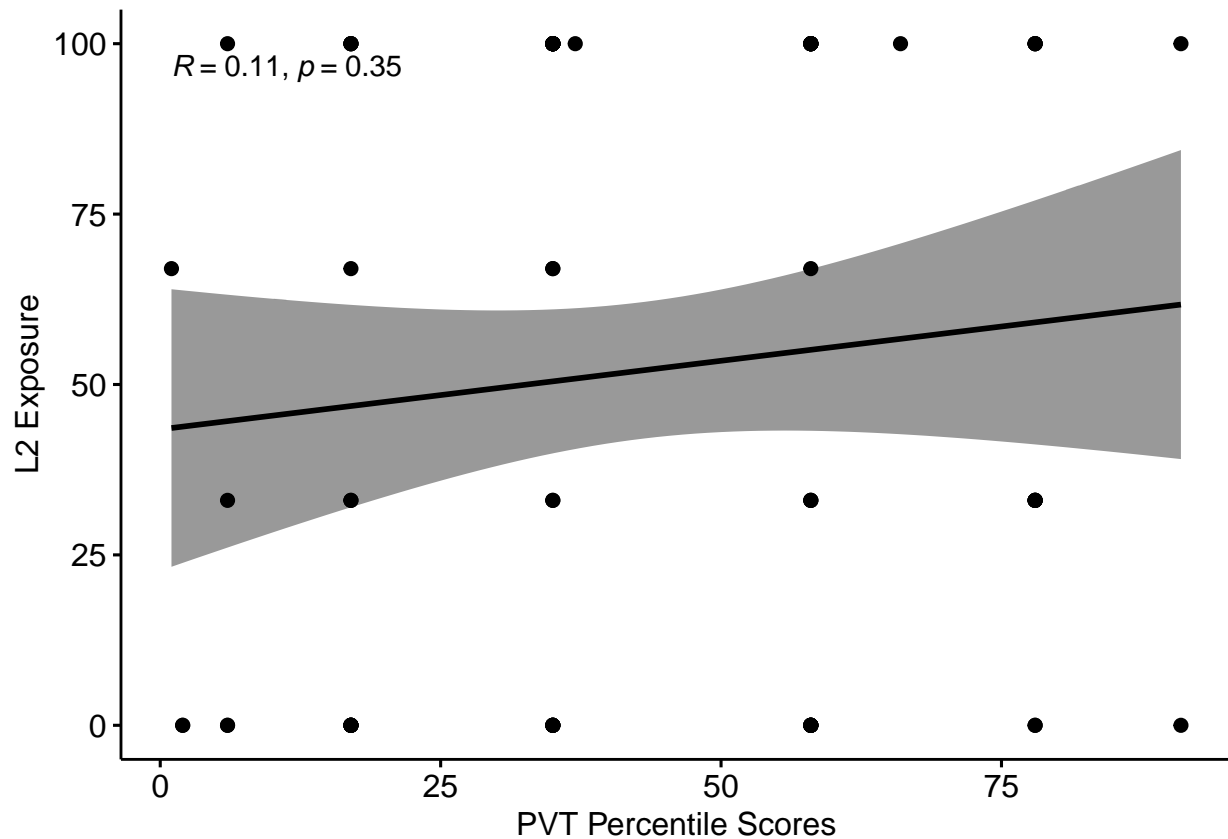


```
##
## Pearson's product-moment correlation
##
## data: plan2_pearson_pvt_score_baseline$pvt_perc and plan2_pearson_pvt_score_baseline$total_comp_rat
## t = 1.9775, df = 604, p-value = 0.04844
## alternative hypothesis: true correlation is not equal to 0
## 95 percent confidence interval:
## 0.0005604156 0.1588358834
## sample estimates:
## cor
## 0.08020368
```

Correlations for Test



```
##
## Pearson's product-moment correlation
##
## data:  plan2_pearson_pvt_score_test$pvt_perc and plan2_pearson_pvt_score_test$total_comp_ratio_score
## t = 1.9753, df = 288, p-value = 0.04919
## alternative hypothesis: true correlation is not equal to 0
## 95 percent confidence interval:
##  0.0004409233 0.2277612530
## sample estimates:
##      cor
## 0.1156146
```

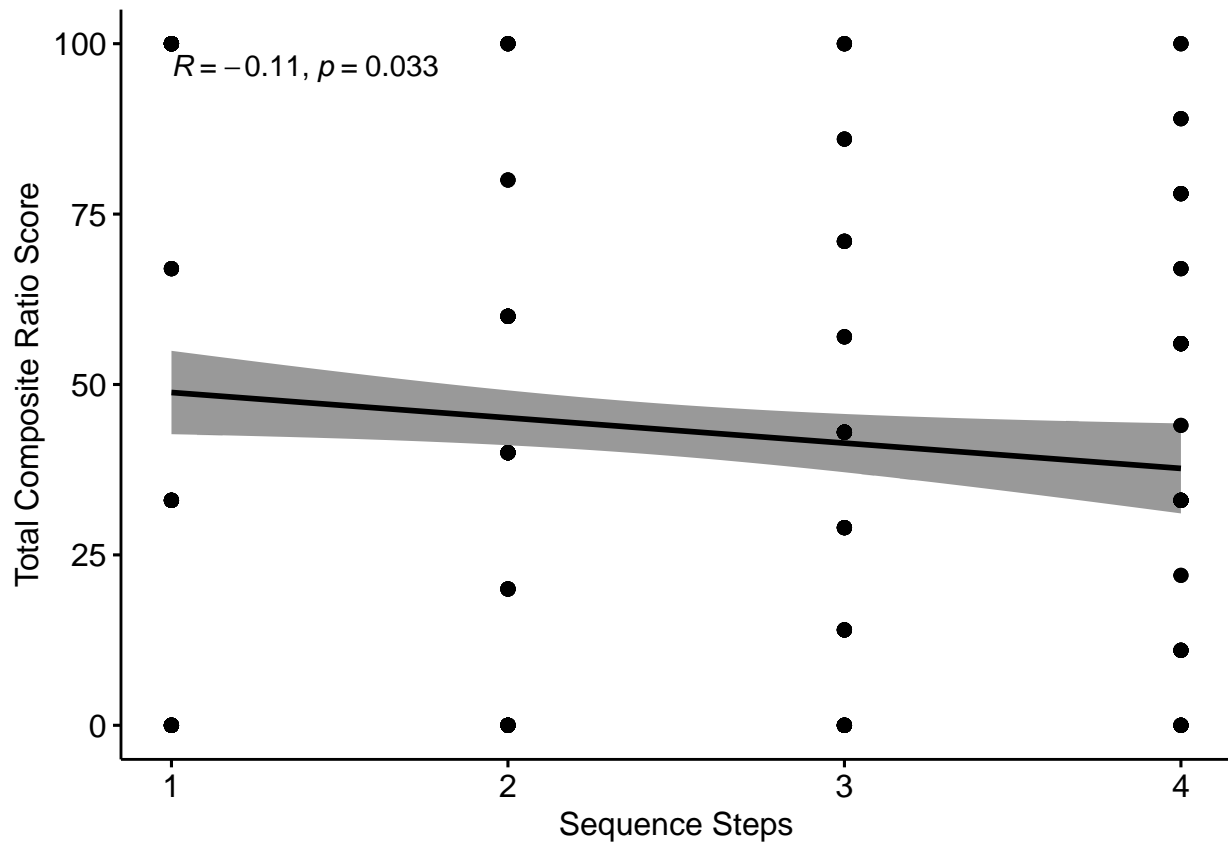


```
##
## Pearson's product-moment correlation
##
## data: plan2_pearson_pvt_score_l2$pvt_perc and plan2_pearson_pvt_score_l2$l2_overall
## t = -1.3905, df = 78, p-value = 0.1683
## alternative hypothesis: true correlation is not equal to 0
## 95 percent confidence interval:
## -0.36284072 0.06646567
## sample estimates:
## cor
## -0.1555224
```

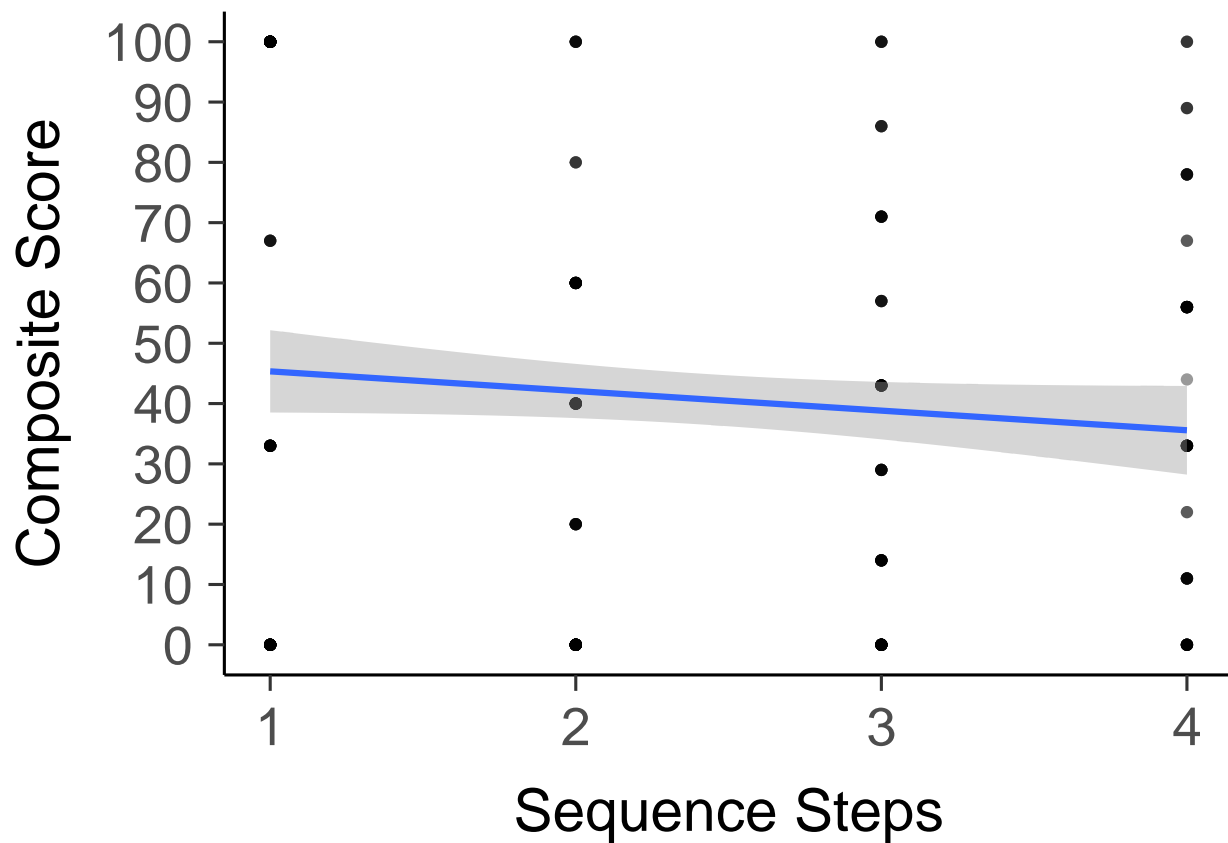
	vars	n	mean	sd	median	trimmed	mad
codenumber	1	101	8451.12	387.12	8489.0	8472.30	339.52
pose*	2	101	1.06	0.28	1.0	1.00	0.00
condition*	3	101	1.99	0.10	2.0	2.00	0.00
gender_dummy	4	101	0.48	0.50	0.0	0.47	0.00
gender*	5	101	1.52	0.50	2.0	1.53	0.00
bilingual	6	101	0.31	0.46	0.0	0.26	0.00
l1*	7	101	1.77	1.91	1.0	1.22	0.00
l1_overall	8	101	84.79	17.28	91.4	87.23	12.75
l2_overall	9	101	13.34	14.66	6.0	11.41	8.90
l3_overall	10	101	1.34	3.87	0.0	0.25	0.00
edu_avg	11	100	17.57	1.36	18.0	17.58	1.48
income	12	101	93765.55	30463.21	93394.0	91974.27	32507.49
max_score_1	13	101	3.08	0.39	3.0	3.00	0.00

## age_mo	14	101	39.47	2.54	39.0	39.19	1.48
## race*	15	98	3.71	0.59	4.0	3.84	0.00
## latinx*	16	101	1.24	0.51	1.0	1.14	0.00
## total_comp_score_1	17	101	1.71	1.31	2.0	1.77	1.48
## total_comp_ratio_score_1	18	101	56.01	43.50	67.0	57.49	48.93
## trial_num	19	101	1.04	0.20	1.0	1.00	0.00
## pvt_perc	20	80	42.91	23.84	35.0	42.77	34.10
##		min	max	range	skew	kurtosis	se
## codenumber	7429.0	9163.0	1734.0	-0.56	-0.04	38.52	
## pose*	1.0	3.0	2.0	4.97	26.34	0.03	
## condition*	1.0	2.0	1.0	-9.75	94.06	0.01	
## gender_dummy	0.0	1.0	1.0	0.10	-2.01	0.05	
## gender*	1.0	2.0	1.0	-0.10	-2.01	0.05	
## bilingual	0.0	1.0	1.0	0.82	-1.33	0.05	
## l1*	1.0	7.0	6.0	2.17	2.97	0.19	
## l1_overall	38.6	100.0	61.4	-0.91	-0.35	1.72	
## l2_overall	0.0	45.5	45.5	0.77	-0.79	1.46	
## l3_overall	0.0	18.8	18.8	3.44	11.43	0.39	
## edu_avg	14.0	20.0	6.0	-0.13	-0.54	0.14	
## income	44503.0	172442.0	127939.0	0.42	-0.34	3031.20	
## max_score_1	3.0	5.0	2.0	4.65	19.83	0.04	
## age_mo	35.0	48.0	13.0	1.13	1.34	0.25	
## race*	1.0	4.0	3.0	-2.19	4.79	0.06	
## latinx*	1.0	4.0	3.0	2.49	7.67	0.05	
## total_comp_score_1	0.0	3.0	3.0	-0.24	-1.71	0.13	
## total_comp_ratio_score_1	0.0	100.0	100.0	-0.18	-1.73	4.33	
## trial_num	1.0	2.0	1.0	4.65	19.83	0.02	
## pvt_perc	1.0	91.0	90.0	0.11	-1.02	2.67	

Correlations for Item



```
##
## Pearson's product-moment correlation
##
## data:  plan2_pearson_item_score_test$trial_num and plan2_pearson_item_score_test$total_comp_ratio_sc
## t = -2.142, df = 353, p-value = 0.03288
## alternative hypothesis: true correlation is not equal to 0
## 95 percent confidence interval:
## -0.214828453 -0.009294834
## sample estimates:
##          cor
## -0.1132733
```



Baseline Means per Task

```
##   pose mean_pose trial_num
## 1   C2      1.32         1
## 2   C3      3.80         2
## 3   C4      0.86         3
## 4   C5      0.99         4
```

```
## # A tibble: 4 x 2
## # Groups:   pose [4]
##   pose      n
##   <chr> <int>
## 1 C2      96
## 2 C3      96
## 3 C4      84
## 4 C5      79
```

```
## # A tibble: 8 x 6
## # Groups:   condition [2]
##   condition pose mean_score sd_score min_score max_score
##   <fct>      <chr>      <dbl>   <dbl>   <dbl>    <dbl>
## 1 Baseline CB2        1.32     6.5      0        33
## 2 Baseline CB3        3.8    13.2      0        60
## 3 Baseline CB4        0.86     4.49      0        29
## 4 Baseline CB5        0.99     4.72      0        33
## 5 Test     C2        57.3    44.0      0       100
```

## 6 Test	C3	33.8	32.4	0	100
## 7 Test	C4	38.4	32.1	0	100
## 8 Test	C5	44.4	29.9	0	100

Score 1-Binary

```
## Linear mixed model fit by maximum likelihood . t-tests use Satterthwaite's
## method [lmerModLmerTest]
## Formula: total_comp_ratio_score_1 ~ bilingual + l3_overall + gender +
## trial_num + edu_c + income_c + age_c + pvt_perc + (1 | codenumber)
## Data: .
##
##      AIC      BIC    logLik deviance df.resid
## 2893.4    2933.7 -1435.7   2871.4      279
##
## Scaled residuals:
##      Min       1Q   Median       3Q      Max
## -1.8276 -0.7265 -0.1066  0.7219  2.1742
##
## Random effects:
## Groups      Name      Variance Std.Dev.
## codenumber (Intercept) 314.8    17.74
## Residual              941.2    30.68
## Number of obs: 290, groups:  codenumber, 79
##
## Fixed effects:
##              Estimate Std. Error      df t value Pr(>|t|)
## (Intercept)  4.480e+01  8.117e+00 1.287e+02  5.519  1.8e-07 ***
## bilingualBilingual  8.390e-01  6.796e+00  7.865e+01  0.123  0.9021
## l3_overall      5.650e-01  6.882e-01  7.681e+01  0.821  0.4142
## genderMale     -7.193e+00  5.819e+00  7.873e+01 -1.236  0.2201
## trial_num      -3.776e+00  1.645e+00  2.220e+02 -2.295  0.0227 *
## edu_c          -2.410e+00  2.241e+00  8.310e+01 -1.075  0.2853
## income_c       -2.206e-05  9.998e-05  7.826e+01 -0.221  0.8259
## age_c          1.996e+00  1.220e+00  7.414e+01  1.636  0.1060
## pvt_perc       1.735e-01  1.197e-01  7.845e+01  1.449  0.1513
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Correlation of Fixed Effects:
##              (Intr) blnglB l3_vrl gndrMl trl_nm edu_c  incm_c age_c
## bilnglBlngl -0.257
## l3_overall  -0.159 -0.291
## genderMale  -0.317 -0.171  0.020
## trial_num   -0.485  0.004 -0.015  0.023
## edu_c       -0.006 -0.093 -0.055  0.248  0.021
## income_c    -0.072  0.297  0.014 -0.183 -0.008  0.096
## age_c       0.223 -0.190 -0.006 -0.081 -0.019  0.096 -0.052
## pvt_perc    -0.702  0.140  0.153  0.008 -0.010 -0.077  0.080 -0.155
## fit warnings:
## Some predictor variables are on very different scales: consider rescaling
##
## # Comparison of Model Performance Indices
```

```

##
## Name | Model | AIC | AIC weights | AICc | AICc weights | BIC | BIC
## -----
## rc_1_test_only | lmerModLmerTest | 2893.367 | 0.133 | 2894.317 | 0.110 | 2933.736 | 6
## rc_2_test_only | lmerModLmerTest | 3540.200 | 4.63e-142 | 3540.839 | 4.46e-142 | 3578.921 | 4
## rc_3_test_only | lmerModLmerTest | 3538.593 | 1.03e-141 | 3539.115 | 1.06e-141 | 3573.442 | 7
## rc_4_test_only | lmerModLmerTest | 3538.851 | 9.08e-142 | 3539.373 | 9.28e-142 | 3573.700 | 6
## rc_5_test_only | lmerModLmerTest | 3537.130 | 2.15e-141 | 3537.546 | 2.31e-141 | 3568.107 | 1
## rc_6_test_only | lmerModLmerTest | 2889.615 | 0.867 | 2890.127 | 0.890 | 2918.974 | 1
## rc_7_test_only | lmerModLmerTest | 3535.656 | 4.49e-141 | 3535.979 | 5.07e-141 | 3562.761 | 1

## Linear mixed model fit by maximum likelihood . t-tests use Satterthwaite's
## method [lmerModLmerTest]
## Formula: total_comp_ratio_score_1 ~ bilingual + l3_overall + gender +
## trial_num + edu_c + income_c + age_c + pvt_perc + (1 | codenumber)
## Data: .
##
## AIC BIC logLik deviance df.resid
## 2893.4 2933.7 -1435.7 2871.4 279
##
## Scaled residuals:
## Min 1Q Median 3Q Max
## -1.8276 -0.7265 -0.1066 0.7219 2.1742
##
## Random effects:
## Groups Name Variance Std.Dev.
## codenumber (Intercept) 314.8 17.74
## Residual 941.2 30.68
## Number of obs: 290, groups: codenumber, 79
##
## Fixed effects:
## Estimate Std. Error df t value Pr(>|t|)
## (Intercept) 4.480e+01 8.117e+00 1.287e+02 5.519 1.8e-07 ***
## bilingualBilingual 8.390e-01 6.796e+00 7.865e+01 0.123 0.9021
## l3_overall 5.650e-01 6.882e-01 7.681e+01 0.821 0.4142
## genderMale -7.193e+00 5.819e+00 7.873e+01 -1.236 0.2201
## trial_num -3.776e+00 1.645e+00 2.220e+02 -2.295 0.0227 *
## edu_c -2.410e+00 2.241e+00 8.310e+01 -1.075 0.2853
## income_c -2.206e-05 9.998e-05 7.826e+01 -0.221 0.8259
## age_c 1.996e+00 1.220e+00 7.414e+01 1.636 0.1060
## pvt_perc 1.735e-01 1.197e-01 7.845e+01 1.449 0.1513
## ---
## Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Correlation of Fixed Effects:
## (Intr) blnglB l3_vrl gndrMl trl_nm edu_c incm_c age_c
## bilnglBlngrl -0.257
## l3_overall -0.159 -0.291
## genderMale -0.317 -0.171 0.020
## trial_num -0.485 0.004 -0.015 0.023
## edu_c -0.006 -0.093 -0.055 0.248 0.021
## income_c -0.072 0.297 0.014 -0.183 -0.008 0.096
## age_c 0.223 -0.190 -0.006 -0.081 -0.019 0.096 -0.052
## pvt_perc -0.702 0.140 0.153 0.008 -0.010 -0.077 0.080 -0.155

```



```
## fit warnings:
## Some predictor variables are on very different scales: consider rescaling
```

Running the full and final models

```
## Linear mixed model fit by maximum likelihood . t-tests use Satterthwaite's
## method [lmerModLmerTest]
## Formula: total_comp_ratio_score_1 ~ bilingual + l3_overall + gender +
## trial_num + edu_c + income_c + age_c + pvt_perc + (1 | codenumber)
## Data: .
##
##      AIC      BIC    logLik deviance df.resid
## 2893.4    2933.7  -1435.7   2871.4      279
##
## Scaled residuals:
##      Min       1Q   Median       3Q      Max
## -1.8276 -0.7265 -0.1066  0.7219  2.1742
##
## Random effects:
## Groups      Name      Variance Std.Dev.
## codenumber (Intercept) 314.8    17.74
## Residual              941.2    30.68
## Number of obs: 290, groups:  codenumber, 79
##
## Fixed effects:
##              Estimate Std. Error      df t value Pr(>|t|)
## (Intercept)    4.480e+01  8.117e+00  1.287e+02  5.519  1.8e-07 ***
## bilingualBilingual  8.390e-01  6.796e+00  7.865e+01  0.123  0.9021
## l3_overall       5.650e-01  6.882e-01  7.681e+01  0.821  0.4142
## genderMale      -7.193e+00  5.819e+00  7.873e+01 -1.236  0.2201
## trial_num       -3.776e+00  1.645e+00  2.220e+02 -2.295  0.0227 *
## edu_c           -2.410e+00  2.241e+00  8.310e+01 -1.075  0.2853
## income_c        -2.206e-05  9.998e-05  7.826e+01 -0.221  0.8259
## age_c           1.996e+00  1.220e+00  7.414e+01  1.636  0.1060
## pvt_perc         1.735e-01  1.197e-01  7.845e+01  1.449  0.1513
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Correlation of Fixed Effects:
##              (Intr) blnglB l3_vrl  gnдрMl  trl_nm  edu_c  incm_c  age_c
## bilnglBlngl -0.257
## l3_overall  -0.159 -0.291
## genderMale  -0.317 -0.171  0.020
## trial_num   -0.485  0.004 -0.015  0.023
## edu_c        -0.006 -0.093 -0.055  0.248  0.021
## income_c     -0.072  0.297  0.014 -0.183 -0.008  0.096
## age_c         0.223 -0.190 -0.006 -0.081 -0.019  0.096 -0.052
## pvt_perc     -0.702  0.140  0.153  0.008 -0.010 -0.077  0.080 -0.155
## fit warnings:
## Some predictor variables are on very different scales: consider rescaling

## Linear mixed model fit by maximum likelihood . t-tests use Satterthwaite's
## method [lmerModLmerTest]
```

```

## Formula: total_comp_ratio_score_1 ~ bilingual + l3_overall + trial_num +
##      age_c + pvt_perc + (1 | codenumber)
## Data: .
##
##      AIC      BIC    logLik deviance df.resid
## 2889.6    2919.0  -1436.8   2873.6      282
##
## Scaled residuals:
##      Min       1Q   Median       3Q      Max
## -1.8521 -0.7109 -0.1216  0.7219  2.0212
##
## Random effects:
## Groups      Name      Variance Std.Dev.
## codenumber (Intercept) 329.6    18.16
## Residual              942.2    30.69
## Number of obs: 290, groups:  codenumber, 79
##
## Fixed effects:
##              Estimate Std. Error      df t value Pr(>|t|)
## (Intercept)    41.7286     7.6563 136.1377   5.450 2.29e-07 ***
## bilingualBilingual -0.2500     6.4923  77.3272  -0.039  0.9694
## l3_overall       0.5539     0.6956  76.2744   0.796  0.4283
## trial_num       -3.7191     1.6458 221.5271  -2.260  0.0248 *
## age_c           1.9518     1.2185  73.9146   1.602  0.1134
## pvt_perc        0.1707     0.1203  78.2569   1.419  0.1600
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Correlation of Fixed Effects:
##              (Intr) blnglB l3_vrl trl_nm age_c
## bilnglBlngl -0.304
## l3_overall  -0.156 -0.318
## trial_num   -0.509  0.011 -0.014
## age_c        0.192 -0.186  0.006 -0.019
## pvt_perc    -0.736  0.118  0.147 -0.009 -0.140

```

Effect Size

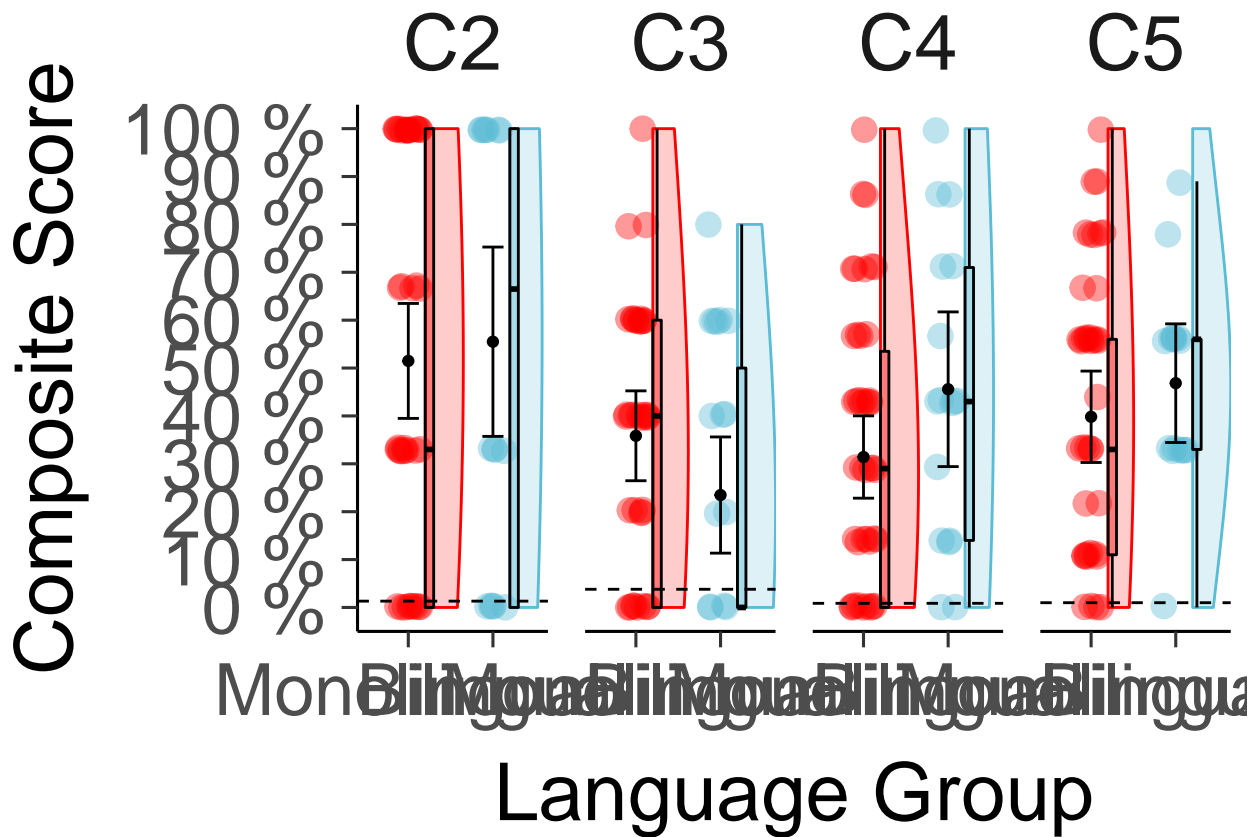
```

##              t      df      d
## bilingualBilingual  0.2213458  73.79625  0.05153284
## l3_overall         0.9428566  72.96558  0.22075810
## trial_num         -2.1427475  532.78861 -0.18566222
## age_c              1.5445322  71.04589  0.36648606
## pvt_perc           1.8145817  74.90247  0.41933244

```

Table Summary

Graph



Score 1-Continuous

```
## Linear mixed model fit by maximum likelihood . t-tests use Satterthwaite's
## method [lmerModLmerTest]
## Formula: total_comp_ratio_score_1 ~ l2_overall + l3_overall + gender +
## trial_num + edu_c + income_c + age_c + pvt_perc + (1 | codenumber)
## Data: .
##
##      AIC      BIC    logLik deviance df.resid
## 2893.4    2933.7  -1435.7   2871.4      279
##
## Scaled residuals:
##      Min       1Q   Median       3Q      Max
## -1.8334 -0.7259 -0.1049  0.7182  2.1717
##
## Random effects:
## Groups      Name      Variance Std.Dev.
## codenumber (Intercept) 315.0    17.75
## Residual              941.1    30.68
## Number of obs: 290, groups:  codenumber, 79
##
## Fixed effects:
##              Estimate Std. Error      df t value Pr(>|t|)
## (Intercept)  4.482e+01  8.413e+00 1.239e+02  5.328 4.52e-07 ***
## l2_overall   1.667e-02  2.163e-01  7.901e+01  0.077  0.9388
## l3_overall   5.727e-01  6.943e-01  7.756e+01  0.825  0.4119
```

```

## genderMale -7.123e+00 5.774e+00 7.877e+01 -1.234 0.2210
## trial_num -3.775e+00 1.645e+00 2.219e+02 -2.294 0.0227 *
## edu_c -2.405e+00 2.247e+00 8.322e+01 -1.070 0.2877
## income_c -2.405e-05 9.794e-05 7.721e+01 -0.246 0.8067
## age_c 2.006e+00 1.221e+00 7.414e+01 1.643 0.1047
## pvt_perc 1.728e-01 1.198e-01 7.825e+01 1.442 0.1532
## ---
## Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Correlation of Fixed Effects:
## (Intr) l2_vrl l3_vrl gndrMl trl_nm edu_c incm_c age_c
## l2_overall -0.362
## l3_overall -0.109 -0.317
## genderMale -0.309 -0.117 0.007
## trial_num -0.472 0.016 -0.018 0.022
## edu_c 0.014 -0.118 -0.043 0.247 0.020
## income_c -0.076 0.222 0.031 -0.163 -0.006 0.100
## age_c 0.239 -0.195 0.001 -0.091 -0.021 0.101 -0.039
## pvt_perc -0.694 0.143 0.146 0.015 -0.009 -0.081 0.071 -0.156
## fit warnings:
## Some predictor variables are on very different scales: consider rescaling

## # Comparison of Model Performance Indices
##
## Name | Model | AIC | AIC weights | AICc | AICc weights | BIC | BIC
## -----
## rc_1_test_only | lmerModLmerTest | 2893.376 | 0.063 | 2894.326 | 0.054 | 2933.745 |
## rc_2_test_only | lmerModLmerTest | 2891.437 | 0.166 | 2892.225 | 0.154 | 2928.135 |
## rc_3_test_only | lmerModLmerTest | 2892.511 | 0.097 | 2893.300 | 0.090 | 2929.210 |
## rc_4_test_only | lmerModLmerTest | 2890.530 | 0.261 | 2891.173 | 0.261 | 2923.559 |
## rc_5_test_only | lmerModLmerTest | 2889.612 | 0.413 | 2890.124 | 0.441 | 2918.971 |
## rc_6_test_only | lmerModLmerTest | 3535.698 | 2.09e-141 | 3536.021 | 2.45e-141 | 3562.803 | 1

## Linear mixed model fit by maximum likelihood . t-tests use Satterthwaite's
## method [lmerModLmerTest]
## Formula: total_comp_ratio_score_1 ~ l2_overall + l3_overall + trial_num +
## age_c + (1 | codenumber)
## Data: .
##
## AIC BIC logLik deviance df.resid
## 3535.7 3562.8 -1760.8 3521.7 348
##
## Scaled residuals:
## Min 1Q Median 3Q Max
## -1.92118 -0.68994 -0.09531 0.71019 1.98395
##
## Random effects:
## Groups Name Variance Std.Dev.
## codenumber (Intercept) 315.3 17.76
## Residual 960.9 31.00
## Number of obs: 355, groups: codenumber, 100
##
## Fixed effects:
## Estimate Std. Error df t value Pr(>|t|)

```

```
## (Intercept) 52.52532 4.94674 303.06925 10.618 <2e-16 ***
## l2_overall 0.01694 0.17902 101.78369 0.095 0.9248
## l3_overall 0.42507 0.65652 94.87962 0.647 0.5189
## trial_num -4.10723 1.50599 271.91818 -2.727 0.0068 **
## age_c 1.75387 0.96046 95.79344 1.826 0.0710 .
## ---
## Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Correlation of Fixed Effects:
## (Intr) l2_vrl l3_vrl trl_nm
## l2_overall -0.448
## l3_overall -0.012 -0.332
## trial_num -0.738 0.034 -0.020
## age_c 0.036 -0.022 0.008 -0.031
```

Running the full and final models

```
## Linear mixed model fit by maximum likelihood . t-tests use Satterthwaite's
## method [lmerModLmerTest]
## Formula: total_comp_ratio_score_1 ~ l2_overall + l3_overall + gender +
## trial_num + edu_c + income_c + age_c + pvt_perc + (1 | codenumber)
## Data: .
##
## AIC BIC logLik deviance df.resid
## 2893.4 2933.7 -1435.7 2871.4 279
##
## Scaled residuals:
## Min 1Q Median 3Q Max
## -1.8334 -0.7259 -0.1049 0.7182 2.1717
##
## Random effects:
## Groups Name Variance Std.Dev.
## codenumber (Intercept) 315.0 17.75
## Residual 941.1 30.68
## Number of obs: 290, groups: codenumber, 79
##
## Fixed effects:
## Estimate Std. Error df t value Pr(>|t|)
## (Intercept) 4.482e+01 8.413e+00 1.239e+02 5.328 4.52e-07 ***
## l2_overall 1.667e-02 2.163e-01 7.901e+01 0.077 0.9388
## l3_overall 5.727e-01 6.943e-01 7.756e+01 0.825 0.4119
## genderMale -7.123e+00 5.774e+00 7.877e+01 -1.234 0.2210
## trial_num -3.775e+00 1.645e+00 2.219e+02 -2.294 0.0227 *
## edu_c -2.405e+00 2.247e+00 8.322e+01 -1.070 0.2877
## income_c -2.405e-05 9.794e-05 7.721e+01 -0.246 0.8067
## age_c 2.006e+00 1.221e+00 7.414e+01 1.643 0.1047
## pvt_perc 1.728e-01 1.198e-01 7.825e+01 1.442 0.1532
## ---
## Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Correlation of Fixed Effects:
## (Intr) l2_vrl l3_vrl gndrMl trl_nm edu_c incm_c age_c
## l2_overall -0.362
```

```

## l3_overall -0.109 -0.317
## genderMale -0.309 -0.117 0.007
## trial_num -0.472 0.016 -0.018 0.022
## edu_c 0.014 -0.118 -0.043 0.247 0.020
## income_c -0.076 0.222 0.031 -0.163 -0.006 0.100
## age_c 0.239 -0.195 0.001 -0.091 -0.021 0.101 -0.039
## pvt_perc -0.694 0.143 0.146 0.015 -0.009 -0.081 0.071 -0.156
## fit warnings:
## Some predictor variables are on very different scales: consider rescaling

## Linear mixed model fit by maximum likelihood . t-tests use Satterthwaite's
## method [lmerModLmerTest]
## Formula: total_comp_ratio_score_1 ~ l2_overall + l3_overall + trial_num +
## age_c + pvt_perc + (1 | codenumber)
## Data: .
##
## AIC BIC logLik deviance df.resid
## 2889.6 2919.0 -1436.8 2873.6 282
##
## Scaled residuals:
## Min 1Q Median 3Q Max
## -1.8535 -0.7084 -0.1220 0.7241 2.0208
##
## Random effects:
## Groups Name Variance Std.Dev.
## codenumber (Intercept) 329.6 18.16
## Residual 942.1 30.69
## Number of obs: 290, groups: codenumber, 79
##
## Fixed effects:
## Estimate Std. Error df t value Pr(>|t|)
## (Intercept) 41.8560 7.9493 130.1570 5.265 5.62e-07 ***
## l2_overall -0.0145 0.2111 78.4702 -0.069 0.9454
## l3_overall 0.5619 0.7019 77.1337 0.801 0.4259
## trial_num -3.7208 1.6461 221.4572 -2.260 0.0248 *
## age_c 1.9588 1.2187 73.9078 1.607 0.1123
## pvt_perc 0.1702 0.1204 78.1222 1.414 0.1614
## ---
## Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Correlation of Fixed Effects:
## (Intr) l2_vrl l3_vrl trl_nm age_c
## l2_overall -0.398
## l3_overall -0.105 -0.342
## trial_num -0.495 0.022 -0.018
## age_c 0.205 -0.187 0.011 -0.021
## pvt_perc -0.722 0.123 0.140 -0.007 -0.140

```

Effect Size

```

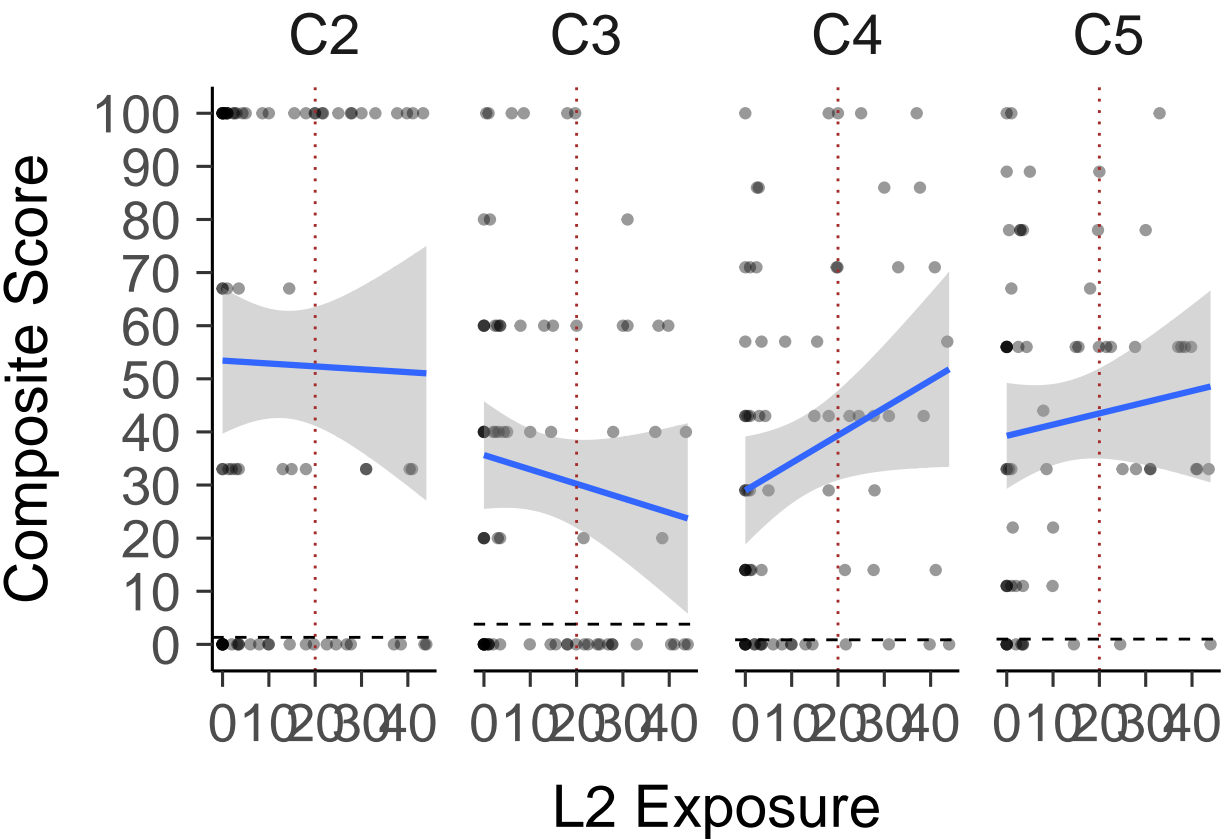
## t df d
## l2_overall 0.03395678 74.81619 0.00785161
## l3_overall 0.99244405 73.60971 0.23134945

```

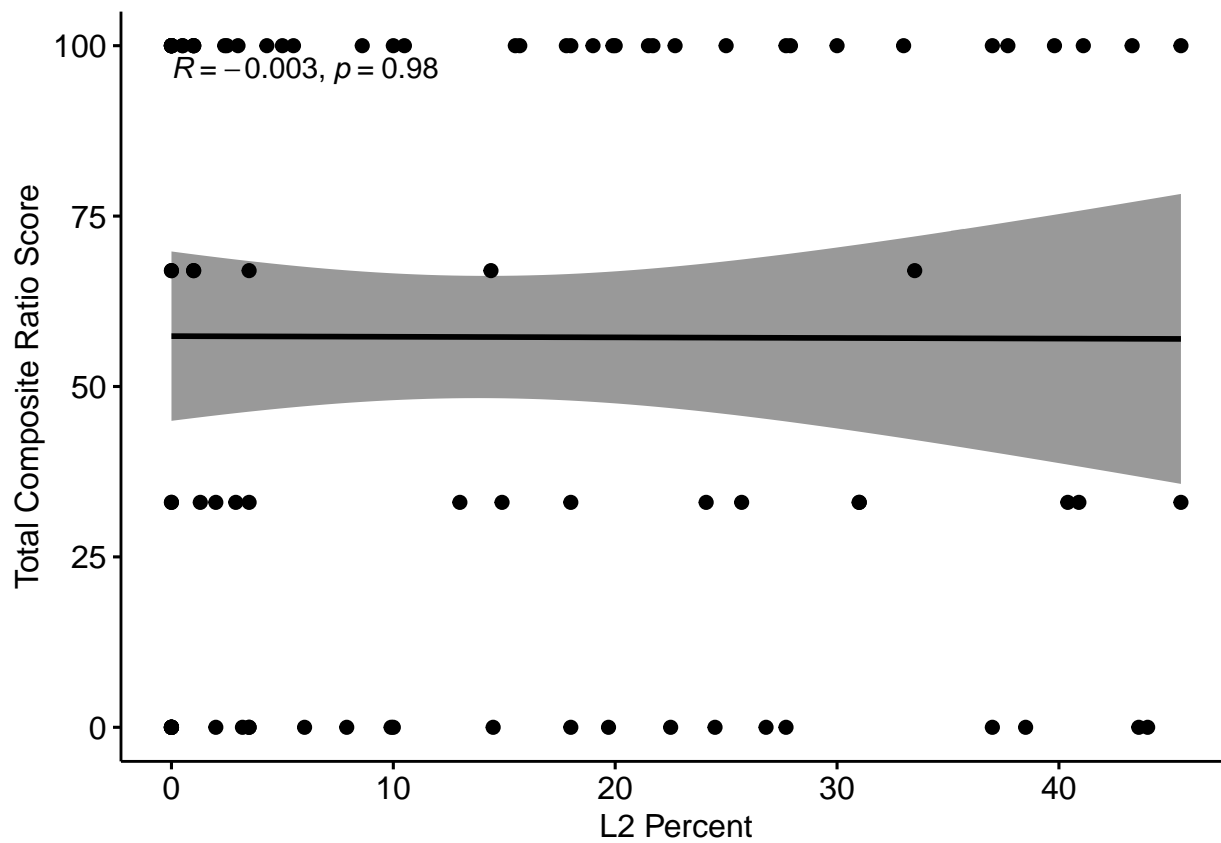
```
## trial_num -2.14370266 532.72816 -0.18575552
## age_c      1.57925586 71.07674 0.37464397
## pvt_perc   1.79045754 74.87895 0.41382256
```

Table Summary

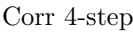
Graph

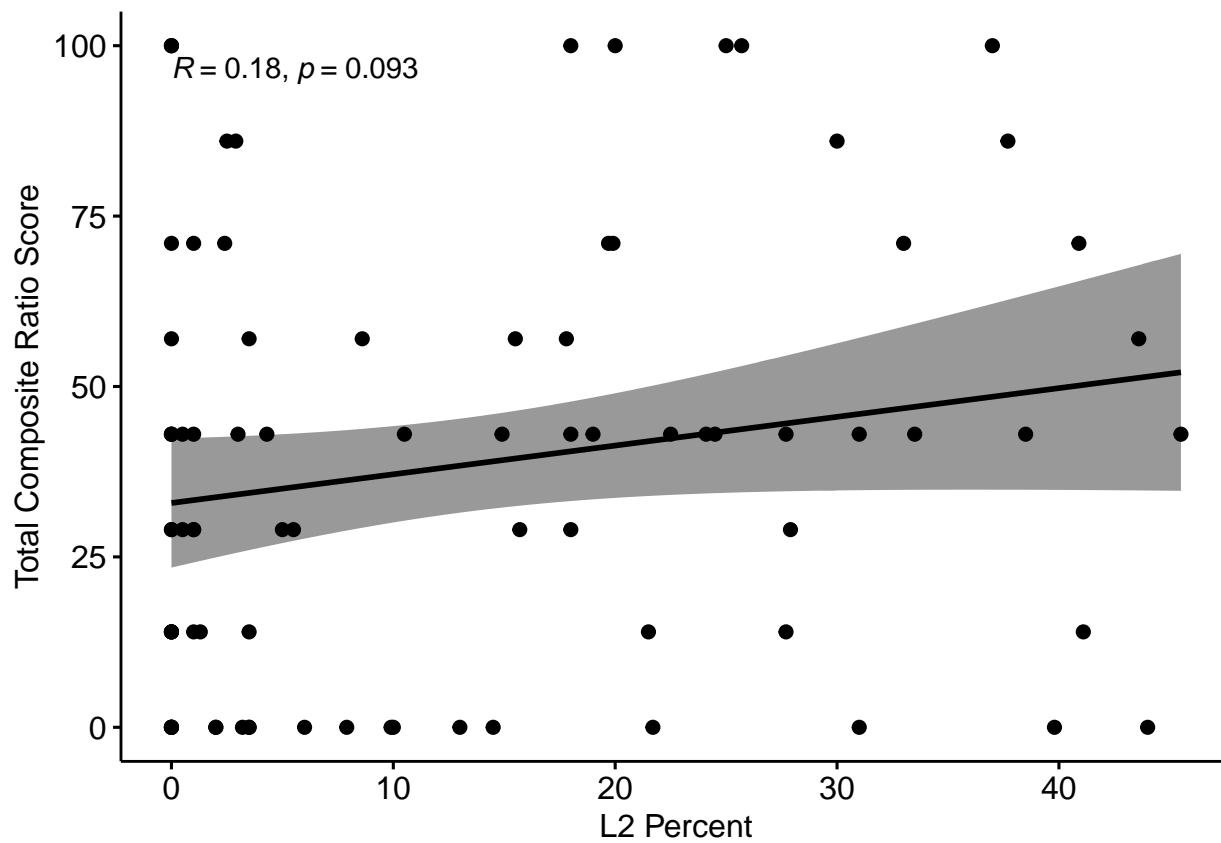


Corr 2-step

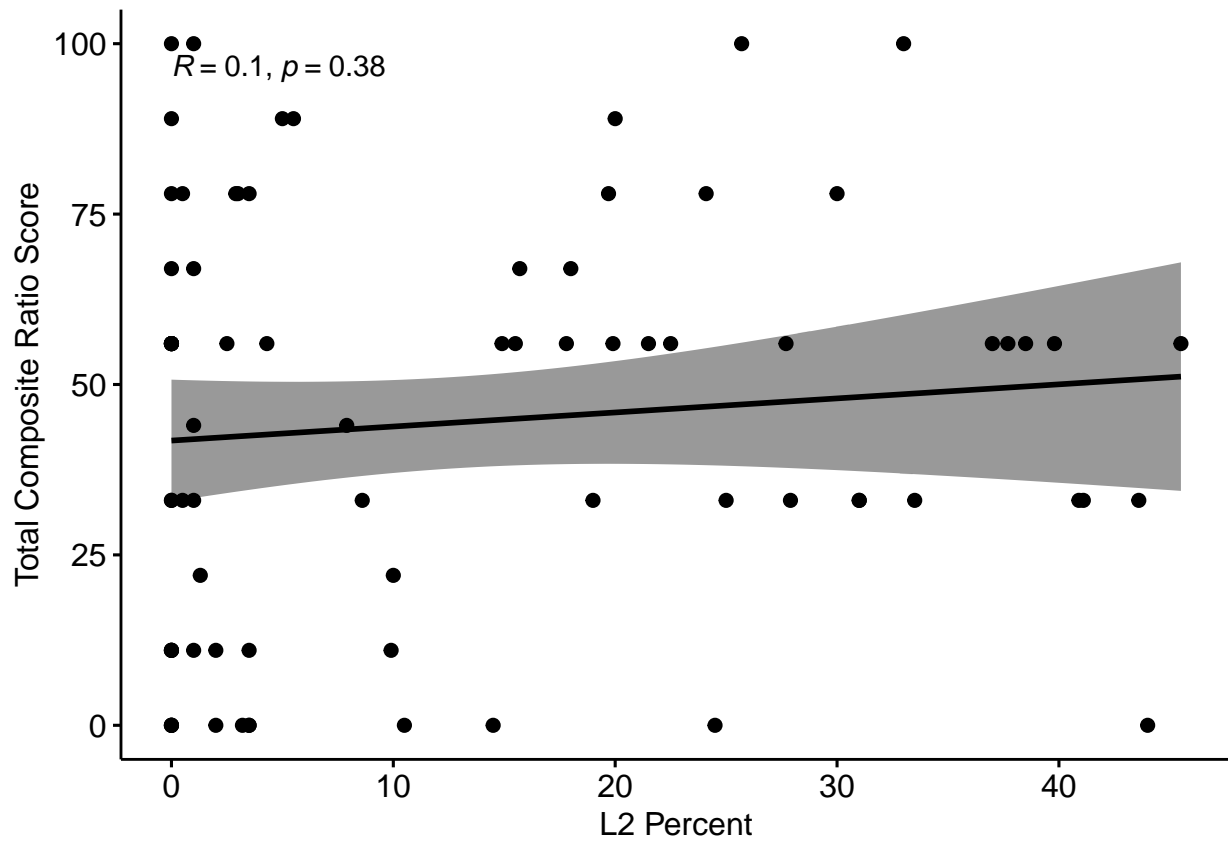


Corr 3-step





Corr 5-step



Score 1-LPA

Correlations & Anova

```
##
## Descriptive statistics by group
## group: 1
##
```

	vars	n	mean	sd	median	trimmed	mad	min
## codenumber	1	58	8415.71	400.39	8484.50	8438.44	342.48	7429.00
## gender_dummy	2	58	0.50	0.50	0.50	0.50	0.74	0.00
## gender*	3	58	1.50	0.50	1.50	1.50	0.74	1.00
## bilingual	4	58	0.00	0.00	0.00	0.00	0.00	0.00
## l1*	5	58	1.00	0.00	1.00	1.00	0.00	1.00
## l1_overall	6	58	97.55	3.67	99.75	98.20	0.37	87.00
## l2_overall	7	58	2.26	3.33	0.75	1.62	1.11	0.00
## l3_overall	8	58	0.14	0.46	0.00	0.01	0.00	0.00
## edu_avg	9	58	17.59	1.40	18.00	17.58	1.48	14.00
## income	10	58	97427.00	28878.56	99128.50	96941.73	25433.26	44503.00
## age_mo.x	11	58	39.34	2.19	39.00	39.12	1.48	36.00
## race*	12	58	1.84	0.37	2.00	1.92	0.00	1.00
## latinx*	13	58	1.05	0.22	1.00	1.00	0.00	1.00
## pvt_perc	14	47	46.06	22.85	35.00	45.95	34.10	6.00
## income_c	15	58	3661.45	28878.56	5362.95	3176.18	25433.26	-49262.55
## edu_c	16	58	0.02	1.40	0.43	0.01	1.48	-3.57
## age_c	17	58	-0.13	2.19	-0.47	-0.35	1.48	-3.47

```

## profiles*      18 58      1.00      0.00      1.00      1.00      0.00      1.00
## age_mo.y       19 58     39.34      2.19     39.00     39.12      1.48     36.00
##               max      range skew kurtosis      se
## codenumber     9162.00    1733.0 -0.72     -0.09    52.57
## gender_dummy    1.00      1.0  0.00     -2.03     0.07
## gender*         2.00      1.0  0.00     -2.03     0.07
## bilingual       0.00      0.0  NaN      NaN      0.00
## l1*             1.00      0.0  NaN      NaN      0.00
## l1_overall      100.00     13.0 -1.45     0.81     0.48
## l2_overall      13.00     13.0  1.59     1.52     0.44
## l3_overall       2.50      2.5  3.65     13.48     0.06
## edu_avg         20.00      6.0 -0.08     -0.50     0.18
## income          158706.00 114203.0 0.03     -0.44  3791.94
## age_mo.x        46.00     10.0  1.00      0.23     0.29
## race*           2.00      1.0 -1.86     1.47     0.05
## latinx*         2.00      1.0  3.94     13.79     0.03
## pvt_perc        91.00     85.0  0.07     -0.90     3.33
## income_c        64940.45 114203.0 0.03     -0.44  3791.94
## edu_c           2.43      6.0 -0.08     -0.50     0.18
## age_c           6.53     10.0  1.00      0.23     0.29
## profiles*       1.00      0.0  NaN      NaN      0.00
## age_mo.y        46.00     10.0  1.00      0.23     0.29
## -----
## group: 2
##               vars  n      mean      sd      median trimmed      mad      min
## codenumber      1 27  8457.81  366.05  8431.00  8458.52  314.31  7760.00
## gender_dummy    2 27   0.48   0.51   0.00   0.48   0.00   0.00
## gender*         3 27   1.52   0.51   2.00   1.52   0.00   1.00
## bilingual       4 27   0.56   0.51   1.00   0.57   0.00   0.00
## l1*             5 27   1.93   1.77   1.00   1.65   0.00   1.00
## l1_overall      6 27  75.68   6.75  77.50  75.83   6.67  64.50
## l2_overall      7 27  22.09   5.69  21.50  21.78   5.19  14.40
## l3_overall      8 27   1.72   3.71   0.00   0.96   0.00   0.00
## edu_avg         9 27  17.54   1.28  18.00  17.59   1.48  15.00
## income          10 27 94457.96 37837.37 90398.00 92327.74 37407.48 44503.00
## age_mo.x        11 27  39.85   3.01  39.00  39.70   1.48  35.00
## race*           12 24   3.42   0.88   4.00   3.55   0.00   1.00
## latinx*         13 27   1.44   0.75   1.00   1.30   0.00   1.00
## pvt_perc        14 20  41.90  26.54  35.00  42.44  34.10   1.00
## income_c        15 27  692.41 37837.37 -3367.55 -1437.81 37407.48 -49262.55
## edu_c           16 27  -0.03   1.28   0.43   0.02   1.48  -2.57
## age_c           17 27   0.38   3.01  -0.47   0.23   1.48  -4.47
## profiles*       18 27   2.00   0.00   2.00   2.00   0.00   2.00
## age_mo.y        19 27  39.85   3.01  39.00  39.70   1.48  35.00
##               max      range skew kurtosis      se
## codenumber     9163.00    1403.0 -0.06     -0.58    70.45
## gender_dummy    1.00      1.0  0.07     -2.07     0.10
## gender*         2.00      1.0 -0.07     -2.07     0.10
## bilingual       1.00      1.0 -0.21     -2.03     0.10
## l1*             6.00      5.0  1.50     0.55     0.34
## l1_overall      85.60     21.1 -0.33     -1.34     1.30
## l2_overall      33.50     19.1  0.49     -0.88     1.10
## l3_overall      14.90     14.9  2.19     4.06     0.71
## edu_avg         20.00      5.0 -0.30     -0.70     0.25

```

```

## income      172442.00 127939.0  0.53   -0.94 7281.81
## age_mo.x    48.00    13.0  0.76    0.23  0.58
## race*       4.00     3.0 -1.22    0.33  0.18
## latinx*     4.00     3.0  1.75    2.81  0.14
## pvt_perc    78.00    77.0  0.02   -1.52  5.94
## income_c    78676.45 127939.0  0.53   -0.94 7281.81
## edu_c       2.43     5.0 -0.30   -0.70  0.25
## age_c       8.53    13.0  0.76    0.23  0.58
## profiles*   2.00     0.0  NaN     NaN   0.00
## age_mo.y    48.00    13.0  0.76    0.23  0.58
## -----
## group: 3
##          vars  n      mean      sd      median      trimmed      mad      min
## codenumber    1 16  8568.19  371.61  8600.00  8585.36  197.93  7768.00
## gender_dummy  2 16    0.38    0.50    0.00    0.36    0.00    0.00
## gender*       3 16    1.62    0.50    2.00    1.64    0.00    1.00
## bilingual     4 16    1.00    0.00    1.00    1.00    0.00    1.00
## l1*           5 16    2.50    1.46    2.50    2.50    2.22    1.00
## l1_overall    6 16   53.88    7.83   55.35   54.32    6.82   38.60
## l2_overall    7 16   38.73    5.80   40.10   39.04    4.67   27.70
## l3_overall    8 16    5.09    7.39    1.40    4.47    2.08    0.00
## edu_avg       9 16   17.56    1.36   18.00   17.57    1.48   15.00
## income      10 16  79324.38 16152.91 75668.50 79490.93 20429.49 54979.00
## age_mo.x     11 16   39.25    2.96   39.00   38.93    1.48   35.00
## race*        12 16    2.69    0.60    3.00    2.79    0.00    1.00
## latinx*      13 16    1.56    0.51    2.00    1.57    0.00    1.00
## pvt_perc     14 13   33.08   21.92   35.00   31.82   26.69    2.00
## income_c     15 16 -14441.17 16152.91 -18097.05 -14274.62 20429.49 -38786.55
## edu_c        16 16   -0.01    1.36    0.43    0.00    1.48   -2.57
## age_c        17 16   -0.22    2.96   -0.47   -0.54    1.48   -4.47
## profiles*    18 16    3.00    0.00    3.00    3.00    0.00    3.00
## age_mo.y     19 16   39.25    2.96   39.00   38.93    1.48   35.00
##          max  range  skew kurtosis      se
## codenumber  9128.00 1360.0 -0.48   -0.47  92.90
## gender_dummy    1.00    1.0  0.47   -1.89  0.12
## gender*         2.00    1.0 -0.47   -1.89  0.12
## bilingual       1.00    0.0  NaN     NaN   0.00
## l1*             4.00    3.0  0.00   -2.02  0.37
## l1_overall      63.00   24.4 -0.80   -0.71  1.96
## l2_overall      45.50   17.8 -0.75   -0.71  1.45
## l3_overall      18.80   18.8  1.06   -0.64  1.85
## edu_avg         20.00    5.0 -0.12   -1.03  0.34
## income      101338.00 46359.0 -0.03   -1.57 4038.23
## age_mo.x       48.00   13.0  1.49    2.31  0.74
## race*          3.00    2.0 -1.55    1.23  0.15
## latinx*        2.00    1.0 -0.23   -2.07  0.13
## pvt_perc       78.00   76.0  0.43   -0.83  6.08
## income_c       7572.45 46359.0 -0.03   -1.57 4038.23
## edu_c          2.43    5.0 -0.12   -1.03  0.34
## age_c          8.53   13.0  1.49    2.31  0.74
## profiles*      3.00    0.0  NaN     NaN   0.00
## age_mo.y       48.00   13.0  1.49    2.31  0.74

```

```

##          Df Sum Sq Mean Sq F value Pr(>F)

```

```
## profiles      2    1745    872.4    1.556    0.217
## Residuals    77   43166    560.6
## 21 observations deleted due to missingness

##
## Pearson's product-moment correlation
##
## data: demo_plan2_lpa$pvt_perc and demo_plan2_lpa$l2_overall
## t = -1.3905, df = 78, p-value = 0.1683
## alternative hypothesis: true correlation is not equal to 0
## 95 percent confidence interval:
##  -0.36284072  0.06646567
## sample estimates:
##           cor
## -0.1555224
```

Models

```
## Linear mixed model fit by maximum likelihood . t-tests use Satterthwaite's
## method [lmerModLmerTest]
## Formula:
## total_comp_ratio_score_1 ~ profiles + l3_overall + gender + trial_num +
##   edu_c + income_c + age_c + pvt_perc + (1 | codenumber)
## Data: .
##
##      AIC      BIC    logLik deviance df.resid
## 2895.1    2939.2  -1435.6   2871.1      278
##
## Scaled residuals:
##      Min       1Q   Median       3Q      Max
## -1.8604 -0.7088 -0.1149  0.7032  2.1818
##
## Random effects:
##   Groups      Name      Variance Std.Dev.
##   codenumber (Intercept) 311.7    17.65
##   Residual              941.9    30.69
## Number of obs: 290, groups:  codenumber, 79
##
## Fixed effects:
##              Estimate Std. Error      df t value Pr(>|t|)
## (Intercept)  4.411e+01  8.319e+00  1.259e+02   5.302 4.96e-07 ***
## profilesMedium  3.061e+00  6.724e+00  7.826e+01   0.455  0.6502
## profilesHigh  -2.403e-01  9.566e+00  7.938e+01  -0.025  0.9800
## l3_overall     5.983e-01  7.563e-01  7.791e+01   0.791  0.4313
## genderMale    -7.039e+00  5.801e+00  7.808e+01  -1.213  0.2286
## trial_num     -3.765e+00  1.646e+00  2.216e+02  -2.287  0.0231 *
## edu_c         -2.442e+00  2.244e+00  8.314e+01  -1.089  0.2795
## income_c      -2.910e-05  9.859e-05  7.640e+01  -0.295  0.7687
## age_c         1.932e+00  1.229e+00  7.411e+01   1.571  0.1203
## pvt_perc      1.744e-01  1.198e-01  7.776e+01   1.456  0.1494
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
```

```
## Correlation of Fixed Effects:
##      (Intr) prflsM prflsH l3_vrl gndrMl trl_nm edu_c  incm_c age_c
## profilesMdm -0.307
## profilesHgh -0.239  0.344
## l3_overall  -0.088 -0.174 -0.496
## genderMale  -0.312 -0.058 -0.168  0.056
## trial_num   -0.478  0.017  0.014 -0.019  0.021
## edu_c        0.012 -0.092 -0.111 -0.018  0.250  0.019
## income_c     -0.043  0.035  0.253 -0.033 -0.177 -0.007  0.099
## age_c        0.248 -0.211 -0.173  0.031 -0.083 -0.022  0.105 -0.031
## pvt_perc     -0.696  0.105  0.150  0.100  0.007 -0.008 -0.084  0.074 -0.162
## fit warnings:
## Some predictor variables are on very different scales: consider rescaling
```

```
## # Comparison of Model Performance Indices
```

```
##
## Name          | Model | AIC | AIC weights | AICc | AICc weights | BIC | BIC
## -----
## rc_1_test_only | lmerModLmerTest | 2895.139 | 0.134 | 2896.265 | 0.108 | 2939.177 | 6
## rc_2_test_only | lmerModLmerTest | 3541.310 | 6.48e-142 | 3542.079 | 6.27e-142 | 3583.903 | 6
## rc_3_test_only | lmerModLmerTest | 3539.859 | 1.34e-141 | 3540.499 | 1.38e-141 | 3578.581 | 8
## rc_4_test_only | lmerModLmerTest | 3539.966 | 1.27e-141 | 3540.605 | 1.31e-141 | 3578.687 | 8
## rc_5_test_only | lmerModLmerTest | 3538.376 | 2.81e-141 | 3538.898 | 3.07e-141 | 3573.225 | 1
## rc_6_test_only | lmerModLmerTest | 2891.401 | 0.866 | 2892.044 | 0.892 | 2924.430 | 1
## rc_7_test_only | lmerModLmerTest | 3536.833 | 6.08e-141 | 3537.249 | 7.01e-141 | 3567.809 | 1
```

```
## Linear mixed model fit by maximum likelihood . t-tests use Satterthwaite's
```

```
## method [lmerModLmerTest]
```

```
## Formula:
```

```
## total_comp_ratio_score_1 ~ profiles + l3_overall + gender + trial_num +
##      edu_c + income_c + age_c + pvt_perc + (1 | codenumber)
```

```
## Data: .
```

```
##
```

```
##      AIC      BIC    logLik deviance df.resid
## 2895.1 2939.2 -1435.6 2871.1      278
```

```
##
```

```
## Scaled residuals:
```

```
##      Min      1Q  Median      3Q      Max
## -1.8604 -0.7088 -0.1149  0.7032  2.1818
```

```
##
```

```
## Random effects:
```

```
## Groups      Name      Variance Std.Dev.
## codenumber (Intercept) 311.7    17.65
## Residual              941.9    30.69
```

```
## Number of obs: 290, groups: codenumber, 79
```

```
##
```

```
## Fixed effects:
```

```
##      Estimate Std. Error      df t value Pr(>|t|)
## (Intercept)  4.411e+01  8.319e+00 1.259e+02  5.302 4.96e-07 ***
## profilesMedium 3.061e+00  6.724e+00 7.826e+01  0.455  0.6502
## profilesHigh  -2.403e-01  9.566e+00 7.938e+01 -0.025  0.9800
## l3_overall     5.983e-01  7.563e-01 7.791e+01  0.791  0.4313
## genderMale    -7.039e+00  5.801e+00 7.808e+01 -1.213  0.2286
## trial_num     -3.765e+00  1.646e+00 2.216e+02 -2.287  0.0231 *
```

```
## edu_c          -2.442e+00  2.244e+00  8.314e+01  -1.089  0.2795
## income_c       -2.910e-05  9.859e-05  7.640e+01  -0.295  0.7687
## age_c          1.932e+00  1.229e+00  7.411e+01   1.571  0.1203
## pvt_perc       1.744e-01  1.198e-01  7.776e+01   1.456  0.1494
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Correlation of Fixed Effects:
##          (Intr) prflsM prflsH l3_vrl gndrMl trl_nm edu_c  incm_c age_c
## profilesMdm -0.307
## profilesHgh -0.239  0.344
## l3_overall  -0.088 -0.174 -0.496
## genderMale  -0.312 -0.058 -0.168  0.056
## trial_num   -0.478  0.017  0.014 -0.019  0.021
## edu_c        0.012 -0.092 -0.111 -0.018  0.250  0.019
## income_c     -0.043  0.035  0.253 -0.033 -0.177 -0.007  0.099
## age_c        0.248 -0.211 -0.173  0.031 -0.083 -0.022  0.105 -0.031
## pvt_perc     -0.696  0.105  0.150  0.100  0.007 -0.008 -0.084  0.074 -0.162
## fit warnings:
## Some predictor variables are on very different scales: consider rescaling
```

Effect Size

```
##          t          df          d
## profilesMedium  0.8191618  73.03948  0.19169944
## profilesHigh   -0.3919406  74.19963 -0.09100167
## l3_overall      1.1191387  72.73861  0.26244084
## trial_num      -2.1387443  532.41927 -0.18537962
## age_c           1.4813379  69.99248  0.35412650
## pvt_perc        1.7867003  73.47177  0.41688998
```

Running the full and final models

```
## Linear mixed model fit by maximum likelihood . t-tests use Satterthwaite's
## method [lmerModLmerTest]
## Formula:
## total_comp_ratio_score_1 ~ profiles + l3_overall + gender + trial_num +
##   edu_c + income_c + age_c + pvt_perc + (1 | codenumber)
## Data: .
##
##      AIC      BIC   logLik deviance df.resid
##  2895.1   2939.2  -1435.6   2871.1      278
##
## Scaled residuals:
##      Min       1Q   Median       3Q      Max
## -1.8604 -0.7088 -0.1149  0.7032  2.1818
##
## Random effects:
##   Groups      Name      Variance Std.Dev.
##   codenumber (Intercept) 311.7     17.65
##   Residual              941.9     30.69
## Number of obs: 290, groups:  codenumber, 79
##
```



```

## Fixed effects:
##           Estimate Std. Error      df t value Pr(>|t|)
## (Intercept)  4.411e+01  8.319e+00  1.259e+02   5.302 4.96e-07 ***
## profilesMedium  3.061e+00  6.724e+00  7.826e+01   0.455  0.6502
## profilesHigh  -2.403e-01  9.566e+00  7.938e+01  -0.025  0.9800
## l3_overall    5.983e-01  7.563e-01  7.791e+01   0.791  0.4313
## genderMale    -7.039e+00  5.801e+00  7.808e+01  -1.213  0.2286
## trial_num     -3.765e+00  1.646e+00  2.216e+02  -2.287  0.0231 *
## edu_c         -2.442e+00  2.244e+00  8.314e+01  -1.089  0.2795
## income_c      -2.910e-05  9.859e-05  7.640e+01  -0.295  0.7687
## age_c         1.932e+00  1.229e+00  7.411e+01   1.571  0.1203
## pvt_perc      1.744e-01  1.198e-01  7.776e+01   1.456  0.1494
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Correlation of Fixed Effects:
##           (Intr) prflsM prflsH l3_vrl gndrMl trl_nm edu_c  incm_c age_c
## profilesMdm -0.307
## profilesHgh -0.239  0.344
## l3_overall  -0.088 -0.174 -0.496
## genderMale  -0.312 -0.058 -0.168  0.056
## trial_num   -0.478  0.017  0.014 -0.019  0.021
## edu_c        0.012 -0.092 -0.111 -0.018  0.250  0.019
## income_c    -0.043  0.035  0.253 -0.033 -0.177 -0.007  0.099
## age_c       0.248 -0.211 -0.173  0.031 -0.083 -0.022  0.105 -0.031
## pvt_perc    -0.696  0.105  0.150  0.100  0.007 -0.008 -0.084  0.074 -0.162
## fit warnings:
## Some predictor variables are on very different scales: consider rescaling

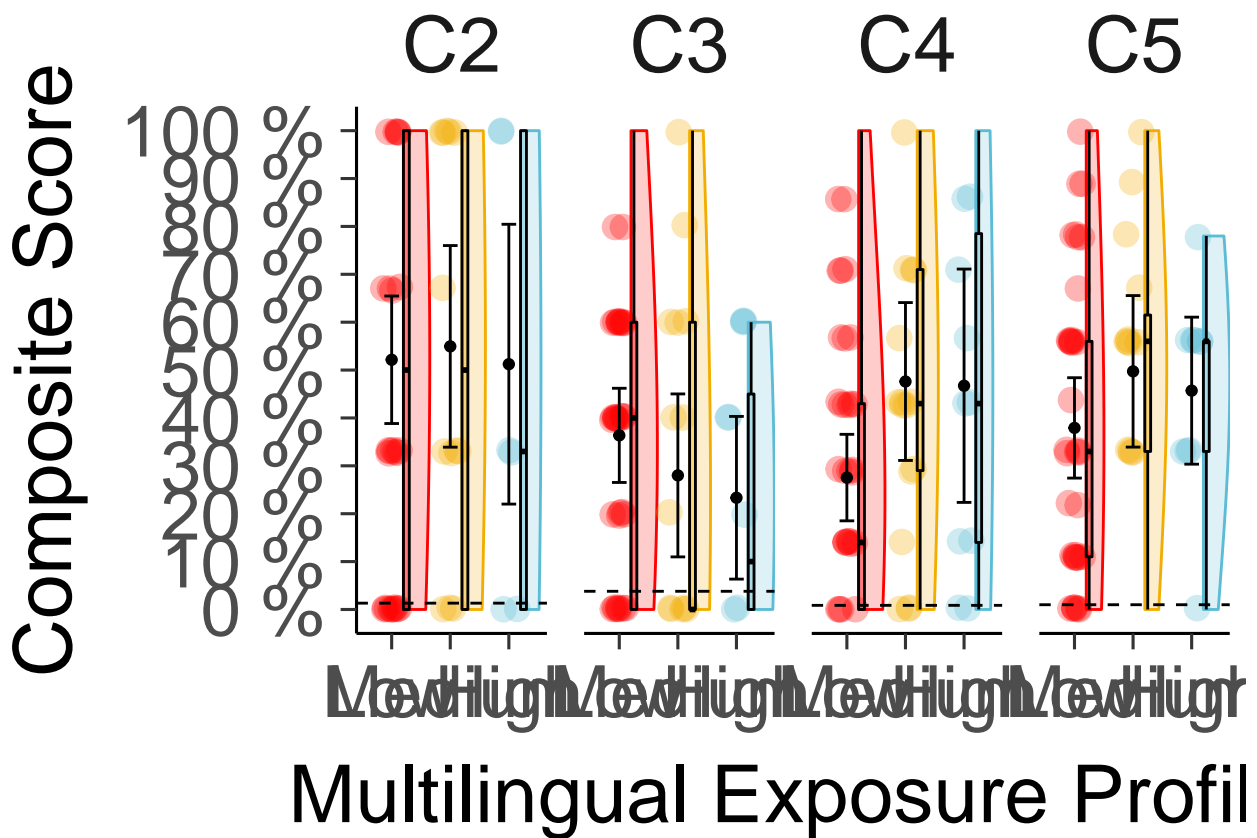
## Linear mixed model fit by maximum likelihood . t-tests use Satterthwaite's
## method [lmerModLmerTest]
## Formula: total_comp_ratio_score_1 ~ profiles + l3_overall + trial_num +
##          age_c + pvt_perc + (1 | codenumber)
## Data: .
##
##           AIC      BIC   logLik deviance df.resid
##    2891.4    2924.4  -1436.7   2873.4     281
##
## Scaled residuals:
##      Min       1Q   Median       3Q      Max
## -1.8534 -0.7089 -0.1147  0.7252  2.0196
##
## Random effects:
## Groups      Name             Variance Std.Dev.
## codenumber (Intercept) 326.9      18.08
## Residual              942.7      30.70
## Number of obs: 290, groups:  codenumber, 79
##
## Fixed effects:
##           Estimate Std. Error      df t value Pr(>|t|)
## (Intercept)  41.2484     7.8889 132.0286   5.229 6.51e-07 ***
## profilesMedium  2.2180     6.7765  77.5611   0.327  0.7443
## profilesHigh   -1.8512     9.2398  79.4600  -0.200  0.8417
## l3_overall     0.6230     0.7647  77.5411   0.815  0.4177

```

```
## trial_num      -3.7146      1.6466 221.1926  -2.256   0.0251 *
## age_c          1.9042      1.2286  73.8607   1.550   0.1254
## pvt_perc       0.1709      0.1205  77.7453   1.419   0.1599
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Correlation of Fixed Effects:
##          (Intr) prflsM prflsH l3_vrl trl_nm age_c
## profilesMdm -0.337
## profilesHgh -0.288  0.337
## l3_overall  -0.074 -0.174 -0.509
## trial_num   -0.500  0.020  0.021 -0.020
## age_c        0.220 -0.207 -0.172  0.040 -0.023
## pvt_perc    -0.727  0.097  0.131  0.100 -0.006 -0.147
```

Table Summary

Graph



#3: Low loads vs. high loads [AKA exploratory analysis]

In this analysis I classify poses 2 & 3 as low load and 4 & 5 as high load
- score_1 = totalsteps + totalpairs

Only Test Trials

Models

Score 1-Binary

```
## # Comparison of Model Performance Indices
##
## Name |          Model |          AIC | AIC weights |          AICc | AICc weights |          BIC | BIC weights |
## -----
## rc_3 | lmerModLmerTest | 3544.994 |      0.098 | 3545.764 |      0.083 | 3587.588 | 3.25e-04 |
## rc_4 | lmerModLmerTest | 3540.549 |      0.902 | 3540.966 |      0.917 | 3571.526 | 1.000 |

## Linear mixed model fit by maximum likelihood . t-tests use Satterthwaite's
## method [lmerModLmerTest]
## Formula: total_comp_ratio_score_1 ~ bilingual * load + l3_overall + age_c +
## (1 | codenumber)
## Data: plan3
##
##      AIC      BIC   logLik deviance df.resid
## 3540.5   3571.5  -1762.3   3524.5     347
##
## Scaled residuals:
##      Min       1Q   Median       3Q      Max
## -1.8281 -0.6951 -0.1095  0.6668  2.0600
##
## Random effects:
## Groups      Name      Variance Std.Dev.
## codenumber (Intercept) 305.2    17.47
## Residual              975.4    31.23
## Number of obs: 355, groups:  codenumber, 100
##
## Fixed effects:
##              Estimate Std. Error      df t value Pr(>|t|)
## (Intercept)      46.2709      3.4633 180.2630  13.360 <2e-16 ***
## bilingualBilingual      -3.3083      6.4398 170.5626  -0.514  0.6081
## loadHigh           -8.2500      4.0225 268.9155  -2.051  0.0412 *
## l3_overall           0.3636      0.6551  94.1543   0.555  0.5801
## age_c               1.6935      0.9551  95.6177   1.773  0.0794 .
## bilingualBilingual:loadHigh 11.2254      7.3707 277.9072   1.523  0.1289
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Correlation of Fixed Effects:
##              (Intr) blnglB lodHgh l3_vrl age_c
## bilnglBlngl -0.506
## loadHigh    -0.526  0.286
## l3_overall  -0.095 -0.286 -0.008
## age_c        0.021 -0.015 -0.013  0.007
## blnglBlngl:H  0.289 -0.491 -0.545 -0.021 -0.006

## # Comparison of Model Performance Indices
##
## Name |          Model |          AIC | AIC weights |          AICc | AICc weights |          BIC | BIC weights |
## -----
```

```
## rc_1 | lmerModLmerTest | 3542.015 |      0.268 | 3542.537 |      0.264 | 3576.864 |      0.065 |
## rc_2 | lmerModLmerTest | 3543.758 |      0.112 | 3544.398 |      0.104 | 3582.480 |      0.004 |
## rc_3 | lmerModLmerTest | 3544.994 |      0.061 | 3545.764 |      0.053 | 3587.588 | 3.03e-04 |
## rc_4 | lmerModLmerTest | 3540.549 |      0.559 | 3540.966 |      0.579 | 3571.526 |      0.931 |
```

```
## OK: No outliers detected.
```

Effect Size

```
##              t          df          d
## bilingualBilingual -0.5038799 161.20326 -0.07937251
## loadHigh          -2.0423765 266.68627 -0.25012982
## l3_overall         0.5418703  90.33163  0.11402641
## age_c              1.7308561  91.81619  0.36126953
## bilingualBilingual:loadHigh 1.5091673 275.40383 0.18187893
```

Running the full and final models

```
## Linear mixed model fit by maximum likelihood . t-tests use Satterthwaite's
## method [lmerModLmerTest]
## Formula: total_comp_ratio_score_1 ~ bilingual * load + l3_overall + gender +
##          edu_c + income_c + age_c + (1 | codenumber)
## Data: plan3
##
##      AIC      BIC    logLik deviance df.resid
##  3545.0   3587.6 -1761.5   3523.0      344
##
## Scaled residuals:
##      Min       1Q   Median       3Q      Max
## -1.84260 -0.69746 -0.09522  0.69438  2.09731
##
## Random effects:
## Groups      Name      Variance Std.Dev.
## codenumber (Intercept) 297.2    17.24
## Residual              974.8    31.22
## Number of obs: 355, groups:  codenumber, 100
##
## Fixed effects:
##              Estimate Std. Error      df t value Pr(>|t|)
## (Intercept)    4.839e+01  4.249e+00 1.458e+02 11.387  <2e-16
## bilingualBilingual -3.404e+00  6.496e+00 1.691e+02 -0.524  0.6010
## loadHigh        -8.324e+00  4.022e+00 2.691e+02 -2.070  0.0394
## l3_overall       3.313e-01  6.529e-01 9.427e+01  0.507  0.6131
## genderMale      -3.978e+00  5.015e+00 9.877e+01 -0.793  0.4296
## edu_c           -1.668e+00  1.944e+00 1.041e+02 -0.858  0.3928
## income_c        -5.299e-05  8.245e-05 9.835e+01 -0.643  0.5219
## age_c            1.738e+00  9.554e-01 9.590e+01  1.819  0.0720
## bilingualBilingual:loadHigh 1.137e+01  7.368e+00 2.781e+02  1.543  0.1241
##
## (Intercept)          ***
## bilingualBilingual
## loadHigh              *
```

```

## l3_overall
## genderMale
## edu_c
## income_c
## age_c
## bilingualBilingual:loadHigh
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Correlation of Fixed Effects:
##      (Intr) blnglB lodHgh l3_vrl gndrMl edu_c  incm_c age_c
## bilnglBlngl -0.350
## loadHigh    -0.441  0.281
## l3_overall  -0.119 -0.283 -0.006
## genderMale  -0.583 -0.105  0.020  0.068
## edu_c       -0.102  0.005  0.005 -0.027  0.170
## income_c    0.008  0.140  0.000  0.026 -0.106  0.125
## age_c       0.077 -0.005 -0.015 -0.003 -0.102  0.046  0.004
## blnglBlng:H  0.240 -0.486 -0.545 -0.021 -0.007 -0.021  0.004 -0.006
## fit warnings:
## Some predictor variables are on very different scales: consider rescaling

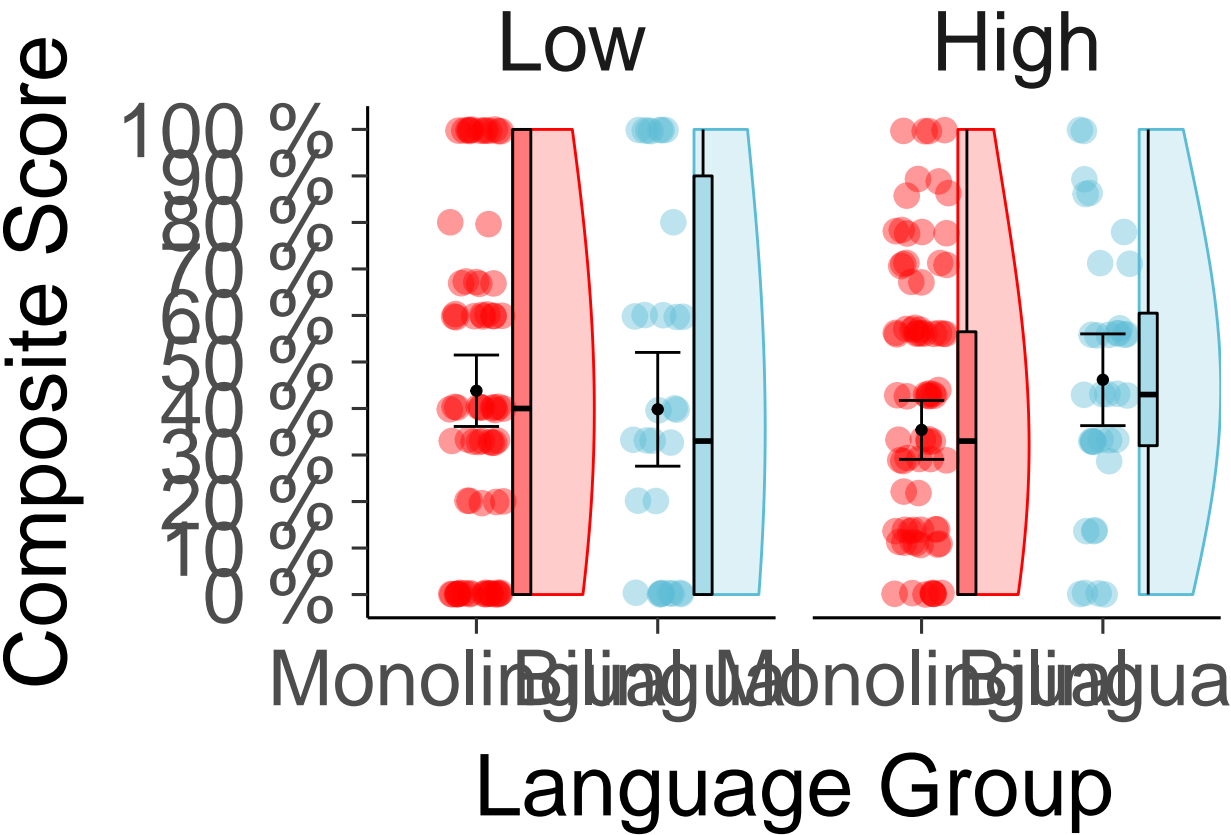
## Linear mixed model fit by maximum likelihood . t-tests use Satterthwaite's
## method [lmerModLmerTest]
## Formula: total_comp_ratio_score_1 ~ bilingual * load + l3_overall + age_c +
## (1 | codenumber)
## Data: plan3
##
##      AIC      BIC   logLik deviance df.resid
##  3540.5   3571.5  -1762.3   3524.5     347
##
## Scaled residuals:
##      Min       1Q   Median       3Q      Max
## -1.8281 -0.6951 -0.1095  0.6668  2.0600
##
## Random effects:
## Groups      Name      Variance Std.Dev.
## codenumber (Intercept) 305.2    17.47
## Residual              975.4    31.23
## Number of obs: 355, groups:  codenumber, 100
##
## Fixed effects:
##              Estimate Std. Error      df t value Pr(>|t|)
## (Intercept)    46.2709    3.4633 180.2630  13.360  <2e-16 ***
## bilingualBilingual -3.3083    6.4398 170.5626  -0.514  0.6081
## loadHigh       -8.2500    4.0225 268.9155  -2.051  0.0412 *
## l3_overall      0.3636    0.6551  94.1543   0.555  0.5801
## age_c           1.6935    0.9551  95.6177   1.773  0.0794 .
## bilingualBilingual:loadHigh 11.2254    7.3707 277.9072   1.523  0.1289
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Correlation of Fixed Effects:
##      (Intr) blnglB lodHgh l3_vrl age_c

```

```
## bilnglBlngl -0.506
## loadHigh -0.526 0.286
## l3_overall -0.095 -0.286 -0.008
## age_c 0.021 -0.015 -0.013 0.007
## blnglBlng:H 0.289 -0.491 -0.545 -0.021 -0.006
```

Table Summary

Graph



Score 1-Continuous

```
## # Comparison of Model Performance Indices
##
## Name | Model | AIC | AIC weights | AICc | AICc weights | BIC | BIC weights |
## -----
## rc_1 | lmerModLmerTest | 3542.746 | 0.292 | 3543.268 | 0.286 | 3577.595 | 0.064 |
## rc_2 | lmerModLmerTest | 3547.419 | 0.028 | 3548.332 | 0.023 | 3593.885 | 1.87e-05 |
## rc_3 | lmerModLmerTest | 3545.648 | 0.068 | 3546.418 | 0.059 | 3588.241 | 3.14e-04 |
## rc_4 | lmerModLmerTest | 3541.267 | 0.612 | 3541.683 | 0.632 | 3572.244 | 0.935 |

## Linear mixed model fit by maximum likelihood . t-tests use Satterthwaite's
## method [lmerModLmerTest]
## Formula: total_comp_ratio_score_1 ~ l2_overall * load + l3_overall + age_c +
## (1 | codenumber)
```

```

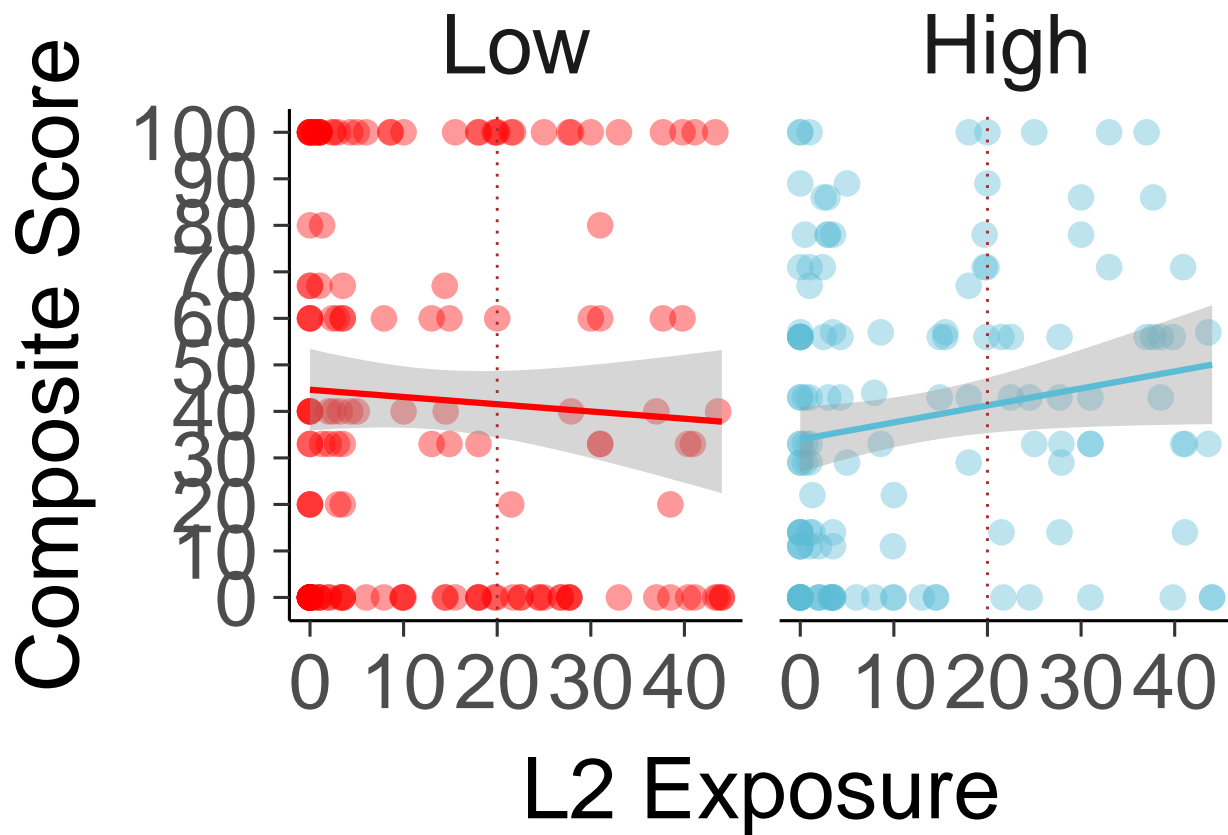
## Data: plan3
##
##      AIC      BIC   logLik deviance df.resid
## 3541.3 3572.2 -1762.6 3525.3 347
##
## Scaled residuals:
##      Min       1Q   Median       3Q      Max
## -1.7722 -0.7105 -0.1118  0.6864  2.0062
##
## Random effects:
## Groups      Name      Variance Std.Dev.
## codenumber (Intercept) 304.8 17.46
## Residual          978.0 31.27
## Number of obs: 355, groups: codenumber, 100
##
## Fixed effects:
##              Estimate Std. Error      df t value Pr(>|t|)
## (Intercept)    46.5761    3.9138 182.6327  11.901 <2e-16 ***
## l2_overall     -0.1003    0.2038 172.5993  -0.492  0.6232
## loadHigh       -8.8962    4.5838 271.1384  -1.941  0.0533 .
## l3_overall      0.3831    0.6536  94.9324   0.586  0.5592
## age_c          1.6897    0.9554  95.6334   1.769  0.0801 .
## l2_overall:loadHigh 0.3052    0.2377 284.2026   1.284  0.2002
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Correlation of Fixed Effects:
##              (Intr) l2_vrl lodHgh l3_vrl age_c
## l2_overall   -0.645
## loadHigh     -0.529  0.347
## l3_overall   -0.037 -0.273  0.006
## age_c         0.020 -0.013 -0.006  0.008
## l2_vrll:ldH  0.351 -0.485 -0.676 -0.035 -0.012

## OK: No outliers detected.

## # Check for Multicollinearity
##
## Low Correlation
##
##              Term  VIF      VIF 95% CI Increased SE Tolerance Tolerance 95% CI
## l2_overall 1.47 [1.31, 1.72] 1.21 0.68 [0.58, 0.76]
## load 1.85 [1.61, 2.17] 1.36 0.54 [0.46, 0.62]
## l3_overall 1.13 [1.05, 1.35] 1.06 0.89 [0.74, 0.96]
## age_c 1.00 [1.00, Inf] 1.00 1.00 [0.00, 1.00]
## l2_overall:load 2.19 [1.89, 2.58] 1.48 0.46 [0.39, 0.53]

```

Graph



Effect Size

	t	df	d
## l2_overall	-0.4833472	163.11238	-0.07569127
## loadHigh	-1.9299770	268.86495	-0.23540465
## l3_overall	0.5728408	91.05835	0.12006158
## age_c	1.7264264	91.83081	0.36031625
## l2_overall:loadHigh	1.2691809	281.50761	0.15128938

Running the full and final models

```
## Linear mixed model fit by maximum likelihood . t-tests use Satterthwaite's
## method [lmerModLmerTest]
## Formula: total_comp_ratio_score_1 ~ l2_overall * load + l3_overall + gender +
## edu_c + income_c + age_c + (1 | codenumber)
## Data: plan3
##
##      AIC      BIC   logLik deviance df.resid
##  3545.6   3588.2  -1761.8   3523.6     344
##
## Scaled residuals:
##      Min       1Q   Median       3Q      Max
## -1.7659 -0.6943 -0.1393  0.7032  2.0477
##
## Random effects:
## Groups      Name                Variance Std.Dev.
```



```

## codenumber (Intercept) 296.2    17.21
## Residual                977.4    31.26
## Number of obs: 355, groups:  codenumber, 100
##
## Fixed effects:
##
##              Estimate Std. Error      df t value Pr(>|t|)
## (Intercept)    4.875e+01 4.605e+00 1.526e+02 10.586 <2e-16 ***
## l2_overall     -1.088e-01 2.051e-01 1.710e+02 -0.531 0.5964
## loadHigh       -9.076e+00 4.584e+00 2.712e+02 -1.980 0.0487 *
## l3_overall      3.516e-01 6.510e-01 9.503e+01 0.540 0.5904
## genderMale     -3.930e+00 5.004e+00 9.879e+01 -0.785 0.4341
## edu_c          -1.709e+00 1.945e+00 1.042e+02 -0.879 0.3817
## income_c       -5.629e-05 8.226e-05 9.765e+01 -0.684 0.4954
## age_c           1.732e+00 9.553e-01 9.588e+01 1.813 0.0730 .
## l2_overall:loadHigh 3.165e-01 2.377e-01 2.841e+02 1.331 0.1841
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Correlation of Fixed Effects:
##              (Intr) l2_vrl lodHgh l3_vrl gndrMl edu_c  incm_c age_c
## l2_overall   -0.503
## loadHigh     -0.463 0.344
## l3_overall   -0.066 -0.270 0.007
## genderMale   -0.530 -0.086 0.025 0.062
## edu_c        -0.103 0.020 0.022 -0.029 0.170
## income_c     -0.016 0.135 0.008 0.032 -0.102 0.126
## age_c        0.071 -0.004 -0.008 -0.002 -0.102 0.047 0.003
## l2_vrll:ldH  0.307 -0.483 -0.677 -0.034 -0.016 -0.041 -0.008 -0.012
## fit warnings:
## Some predictor variables are on very different scales: consider rescaling

## Linear mixed model fit by maximum likelihood . t-tests use Satterthwaite's
## method [lmerModLmerTest]
## Formula: total_comp_ratio_score_1 ~ l2_overall * load + l3_overall + age_c +
## (1 | codenumber)
## Data: plan3
##
##      AIC      BIC   logLik deviance df.resid
## 3541.3    3572.2 -1762.6   3525.3      347
##
## Scaled residuals:
##      Min       1Q   Median       3Q      Max
## -1.7722 -0.7105 -0.1118  0.6864  2.0062
##
## Random effects:
## Groups      Name      Variance Std.Dev.
## codenumber (Intercept) 304.8    17.46
## Residual              978.0    31.27
## Number of obs: 355, groups:  codenumber, 100
##
## Fixed effects:
##
##              Estimate Std. Error      df t value Pr(>|t|)
## (Intercept)    46.5761     3.9138 182.6327 11.901 <2e-16 ***
## l2_overall     -0.1003     0.2038 172.5993 -0.492 0.6232

```

```
## loadHigh          -8.8962      4.5838 271.1384 -1.941  0.0533 .
## l3_overall        0.3831      0.6536  94.9324  0.586  0.5592
## age_c             1.6897      0.9554  95.6334  1.769  0.0801 .
## l2_overall:loadHigh 0.3052      0.2377 284.2026  1.284  0.2002
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Correlation of Fixed Effects:
##      (Intr) l2_vrl lodHgh l3_vrl age_c
## l2_overall -0.645
## loadHigh   -0.529  0.347
## l3_overall -0.037 -0.273  0.006
## age_c       0.020 -0.013 -0.006  0.008
## l2_vrll:ldH 0.351 -0.485 -0.676 -0.035 -0.012
```

Table Summary

Score 1-LPA

```
## OK: No outliers detected.
```

```
## Linear mixed model fit by maximum likelihood . t-tests use Satterthwaite's
## method [lmerModLmerTest]
## Formula: total_comp_ratio_score_1 ~ profiles * load + age_c + (1 | codenumber)
## Data: plan3_lpa
##
##      AIC      BIC   logLik deviance df.resid
## 3540.8 3575.7 -1761.4 3522.8      346
##
## Scaled residuals:
##      Min       1Q   Median       3Q      Max
## -1.8093 -0.7059 -0.1163  0.6534  2.0311
##
## Random effects:
## Groups      Name      Variance Std.Dev.
## codenumber (Intercept) 301.0    17.35
## Residual              972.2    31.18
## Number of obs: 355, groups: codenumber, 100
##
## Fixed effects:
##              Estimate Std. Error    df t value Pr(>|t|)
## (Intercept)    46.6243    3.7964 183.1796  12.281 <2e-16 ***
## profilesMedium -0.3505    6.6518 179.0090  -0.053  0.9580
## profilesHigh   -4.8815    8.0443 180.9761  -0.607  0.5447
## loadHigh      -10.4171    4.4257 268.6425  -2.354  0.0193 *
## age_c          1.5923    0.9559  95.8608   1.666  0.0990 .
## profilesMedium:loadHigh 12.9397    7.7726 269.7805   1.665  0.0971 .
## profilesHigh:loadHigh  13.4929    9.8936 288.2339   1.364  0.1737
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Correlation of Fixed Effects:
```

```
##          (Intr) prflsM prflsH lodHgh age_c  prfM:H
## profilesMdm -0.573
## profilesHgh -0.470  0.268
## loadHigh    -0.532  0.304  0.251
## age_c        0.048 -0.082  0.011 -0.008
## prflsMdm:lH  0.302 -0.526 -0.143 -0.569 -0.004
## prflsHgh:lH  0.237 -0.134 -0.510 -0.447 -0.014  0.255
```

Comparison of Model Performance Indices

```
##
## Name |          Model |          AIC | AIC weights |          AICc | AICc weights |          BIC | BIC weights |
## -----|-----|-----|-----|-----|-----|-----|-----|
## rc_1 | lmerModLmerTest | 3542.669 | 0.193 | 3543.309 | 0.190 | 3581.391 | 0.051 |
## rc_2 | lmerModLmerTest | 3546.934 | 0.023 | 3548.001 | 0.018 | 3597.271 | 1.80e-05 |
## rc_3 | lmerModLmerTest | 3542.250 | 0.238 | 3542.890 | 0.234 | 3580.971 | 0.062 |
## rc_4 | lmerModLmerTest | 3545.067 | 0.058 | 3545.979 | 0.050 | 3591.533 | 3.18e-04 |
## rc_5 | lmerModLmerTest | 3540.817 | 0.488 | 3541.339 | 0.508 | 3575.666 | 0.887 |
```

Effect Size

```
##          t          df          d
## profilesMedium    -0.05060197 169.35297 -0.007776802
## profilesHigh      -0.59735593 171.20040 -0.091308411
## loadHigh          -2.33724889 265.46883 -0.286898441
## age_c              1.62654855  92.03683  0.339090956
## profilesMedium:loadHigh 1.64764788 266.54583 0.201840565
## profilesHigh:loadHigh  1.34792135 284.40461 0.159855002
```

Running the full and final models

```
## Linear mixed model fit by maximum likelihood . t-tests use Satterthwaite's
## method [lmerModLmerTest]
## Formula: total_comp_ratio_score_1 ~ profiles * load + gender + edu_c +
## income_c + age_c + (1 | codenumber)
## Data: plan3_lpa
##
##          AIC          BIC    logLik deviance df.resid
##    3545.1    3591.5  -1760.5   3521.1      343
##
## Scaled residuals:
##      Min       1Q   Median       3Q      Max
## -1.7843 -0.7038 -0.1346  0.6480  2.0470
##
## Random effects:
##  Groups      Name      Variance Std.Dev.
##  codenumber (Intercept) 291.7    17.08
##  Residual              971.6    31.17
## Number of obs: 355, groups: codenumber, 100
##
## Fixed effects:
##              Estimate Std. Error      df t value Pr(>|t|)
## (Intercept)  4.879e+01  4.505e+00 1.514e+02  10.830  <2e-16 ***
```

```

## profilesMedium      -4.470e-01  6.616e+00  1.801e+02  -0.068  0.9462
## profilesHigh        -5.548e+00  8.161e+00  1.773e+02  -0.680  0.4975
## loadHigh            -1.056e+01  4.425e+00  2.688e+02  -2.387  0.0177 *
## genderMale          -3.983e+00  4.978e+00  9.829e+01  -0.800  0.4255
## edu_c               -1.696e+00  1.935e+00  1.041e+02  -0.877  0.3826
## income_c            -6.241e-05  8.238e-05  9.764e+01  -0.758  0.4505
## age_c               1.635e+00  9.553e-01  9.615e+01   1.712  0.0902 .
## profilesMedium:loadHigh 1.308e+01  7.771e+00  2.699e+02   1.683  0.0936 .
## profilesHigh:loadHigh  1.395e+01  9.899e+00  2.880e+02   1.410  0.1597
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Correlation of Fixed Effects:
##      (Intr) prflsM prflsH lodHgh gnldrMl edu_c  incm_c age_c  prfM:H
## profilesMdm -0.472
## profilesHgh -0.342  0.269
## loadHigh    -0.461  0.305  0.246
## genderMale  -0.544 -0.018 -0.096  0.022
## edu_c       -0.110  0.011  0.025  0.017  0.171
## income_c    0.014  0.027  0.184  0.004 -0.111  0.128
## age_c       0.097 -0.079  0.021 -0.009 -0.105  0.046  0.011
## prflsMdm:lH 0.263 -0.528 -0.138 -0.569 -0.015 -0.014  0.009 -0.003
## prflsHgh:lH 0.201 -0.136 -0.506 -0.447  0.000 -0.049 -0.014 -0.018  0.255
## fit warnings:
## Some predictor variables are on very different scales: consider rescaling

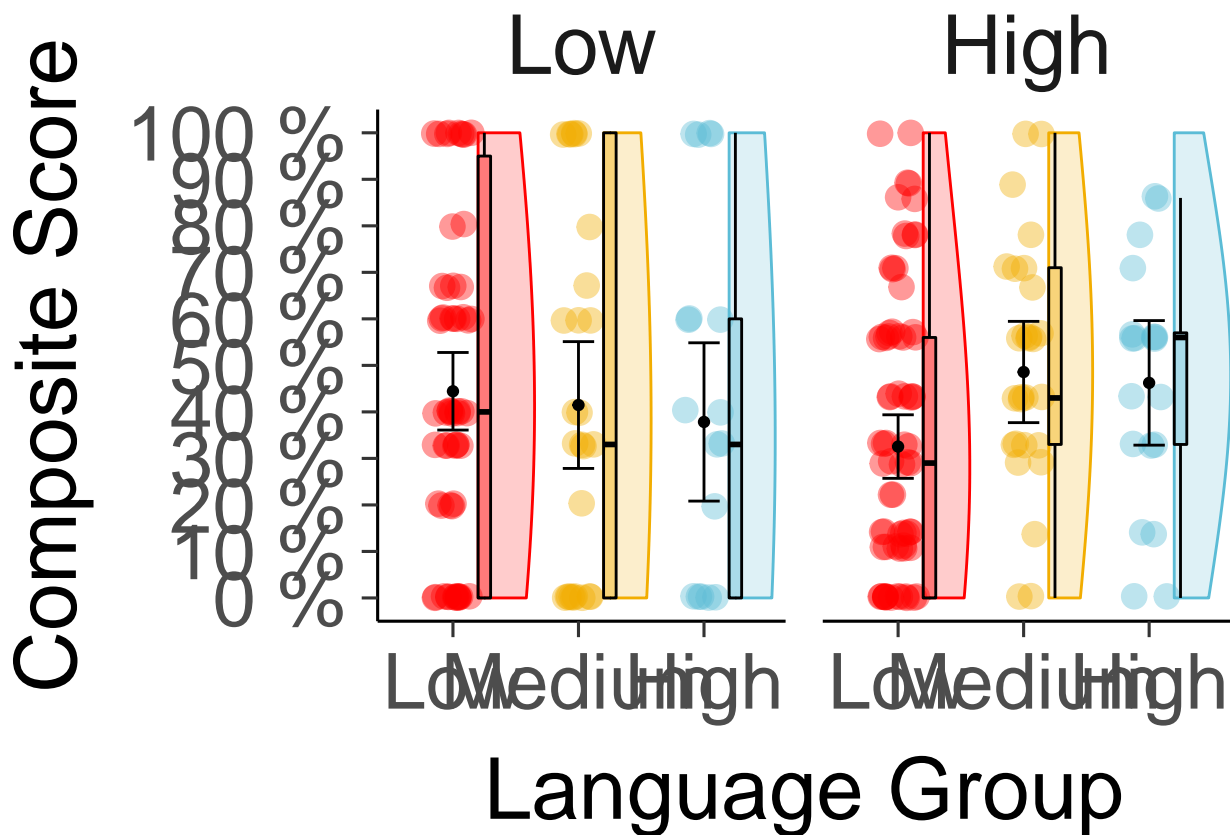
## Linear mixed model fit by maximum likelihood . t-tests use Satterthwaite's
## method [lmerModLmerTest]
## Formula: total_comp_ratio_score_1 ~ profiles * load + age_c + (1 | codenumber)
## Data: plan3_lpa
##
##      AIC      BIC   logLik deviance df.resid
## 3540.8 3575.7 -1761.4 3522.8      346
##
## Scaled residuals:
##      Min       1Q   Median       3Q      Max
## -1.8093 -0.7059 -0.1163  0.6534  2.0311
##
## Random effects:
## Groups      Name      Variance Std.Dev.
## codenumber (Intercept) 301.0    17.35
## Residual              972.2    31.18
## Number of obs: 355, groups: codenumber, 100
##
## Fixed effects:
##              Estimate Std. Error    df t value Pr(>|t|)
## (Intercept)    46.6243    3.7964 183.1796  12.281 <2e-16 ***
## profilesMedium -0.3505    6.6518 179.0090  -0.053  0.9580
## profilesHigh   -4.8815    8.0443 180.9761  -0.607  0.5447
## loadHigh      -10.4171    4.4257 268.6425  -2.354  0.0193 *
## age_c          1.5923    0.9559  95.8608   1.666  0.0990 .
## profilesMedium:loadHigh 12.9397    7.7726 269.7805   1.665  0.0971 .
## profilesHigh:loadHigh  13.4929    9.8936 288.2339   1.364  0.1737
## ---

```

```
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Correlation of Fixed Effects:
##              (Intr) prflsM prflsH lodHgh age_c  prfM:H
## profilesMdm -0.573
## profilesHgh -0.470  0.268
## loadHigh    -0.532  0.304  0.251
## age_c        0.048 -0.082  0.011 -0.008
## prflsMdm:lH  0.302 -0.526 -0.143 -0.569 -0.004
## prflsHgh:lH  0.237 -0.134 -0.510 -0.447 -0.014  0.255
```

Table Summary

Graph



#4: Supplementary Material (Condition as a variable)

In this analysis I include condition as a variable interacted with Bilingualism - $\text{score}_1 = \text{totalsteps} + \text{totalpairs}$

Models

Score 1-Binary

```
## # Comparison of Model Performance Indices
##
## Name | Model | AIC | AIC weights | AICc | AICc weights | BIC | BIC weights |
## -----
## rc_1 | lmerModLmerTest | 7027.517 | 0.155 | 7027.758 | 0.153 | 7069.157 | 0.019 |
## rc_2 | lmerModLmerTest | 7025.733 | 0.379 | 7025.926 | 0.382 | 7062.747 | 0.468 |
## rc_3 | lmerModLmerTest | 7029.769 | 0.050 | 7030.125 | 0.047 | 7080.663 | 6.03e-05 |
## rc_4 | lmerModLmerTest | 7025.553 | 0.415 | 7025.746 | 0.418 | 7062.567 | 0.513 |

## OK: No outliers detected.

## Linear mixed model fit by maximum likelihood . t-tests use Satterthwaite's
## method [lmerModLmerTest]
## Formula: total_comp_ratio_score_1 ~ bilingual * condition + l3_overall +
## age_c + (1 | codenumber)
## Data: plan2
##
## AIC BIC logLik deviance df.resid
## 7025.6 7062.6 -3504.8 7009.6 747
##
## Scaled residuals:
## Min 1Q Median 3Q Max
## -2.05528 -0.35246 -0.08762 0.29583 2.48282
##
## Random effects:
## Groups Name Variance Std.Dev.
## codenumber (Intercept) 66.18 8.135
## Residual 580.70 24.098
## Number of obs: 755, groups: codenumber, 101
##
## Fixed effects:
## Estimate Std. Error df t value Pr(>|t|)
## (Intercept) 1.4820 1.7570 212.1885 0.843 0.3999
## bilingualBilingual 0.2067 3.2735 198.9702 0.063 0.9497
## conditionTest 41.0656 2.1204 672.3464 19.366 <2e-16
## l3_overall 0.1572 0.3261 98.7294 0.482 0.6308
## age_c 0.9553 0.4714 100.0776 2.027 0.0454
## bilingualBilingual:conditionTest 2.5605 3.8259 670.3453 0.669 0.5036
##
## (Intercept)
## bilingualBilingual
## conditionTest ***
## l3_overall
## age_c *
## bilingualBilingual:conditionTest
## ---
## Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Correlation of Fixed Effects:
## (Intr) blnglB cndtnT l3_vrl age_c
## bilnglBlngl -0.507
## conditinTst -0.565 0.305
```

```
## l3_overall -0.090 -0.279 -0.005
## age_c      0.002 -0.010  0.008  0.007
## blnglBlng:T 0.314 -0.540 -0.554 -0.008 -0.005
```

Effect Size

```
##
##          t          df          d
## bilingualBilingual      0.06175005 187.26674 0.009024787
## conditionTest          19.33361172 669.87917 1.493979889
## l3_overall              0.47091563  94.80365 0.096729865
## age_c                   1.98355981  96.09284 0.404696817
## bilingualBilingual:conditionTest 0.66506490 667.87193 0.051469201
```

Running the full and final models

```
## Linear mixed model fit by maximum likelihood . t-tests use Satterthwaite's
## method [lmerModLmerTest]
## Formula: total_comp_ratio_score_1 ~ bilingual * condition + l3_overall +
## gender + edu_c + income_c + age_c + (1 | codenumber)
## Data: plan2
##
##      AIC      BIC   logLik deviance df.resid
## 7029.8   7080.7  -3503.9   7007.8     744
##
## Scaled residuals:
##      Min       1Q   Median       3Q      Max
## -2.05277 -0.35359 -0.09303  0.30388  2.55247
##
## Random effects:
## Groups      Name      Variance Std.Dev.
## codenumber (Intercept) 63.26    7.954
## Residual              580.92   24.102
## Number of obs: 755, groups: codenumber, 101
##
## Fixed effects:
##
##              Estimate Std. Error    df t value
## (Intercept)    1.928e+00  2.143e+00 1.629e+02  0.900
## bilingualBilingual -1.910e-02  3.293e+00 1.971e+02 -0.006
## conditionTest     4.105e+01  2.121e+00 6.721e+02 19.355
## l3_overall        1.560e-01  3.241e-01 9.846e+01  0.482
## genderMale       -7.587e-01  2.461e+00 1.014e+02 -0.308
## edu_c            -1.092e+00  9.303e-01 1.073e+02 -1.174
## income_c         -3.120e-05  4.041e-05 1.011e+02 -0.772
## age_c             9.612e-01  4.700e-01 9.962e+01  2.045
## bilingualBilingual:conditionTest 2.585e+00  3.826e+00 6.703e+02  0.676
##
##              Pr(>|t|)
## (Intercept)    0.3697
## bilingualBilingual 0.9954
## conditionTest <2e-16 ***
## l3_overall      0.6312
## genderMale      0.7585
## edu_c           0.2432
## income_c        0.4418
```

```

## age_c                                0.0435 *
## bilingualBilingual:conditionTest    0.4995
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Correlation of Fixed Effects:
##      (Intr) blnglB cndtnT l3_vrl gndrMl edu_c  incm_c age_c
## bilnglBlngl -0.364
## conditinTst -0.473  0.304
## l3_overall  -0.115 -0.274 -0.003
## genderMale  -0.576 -0.092  0.015  0.067
## edu_c       -0.087 -0.004 -0.006 -0.028  0.171
## income_c    -0.007  0.139  0.012  0.031 -0.105  0.130
## age_c       0.065 -0.006  0.005 -0.004 -0.103  0.026 -0.028
## blnglBlng:T  0.263 -0.536 -0.554 -0.009 -0.009 -0.002 -0.002 -0.004
## fit warnings:
## Some predictor variables are on very different scales: consider rescaling

## Linear mixed model fit by maximum likelihood . t-tests use Satterthwaite's
## method [lmerModLmerTest]
## Formula: total_comp_ratio_score_1 ~ bilingual * condition + l3_overall +
##          age_c + (1 | codenumber)
## Data: plan2
##
##      AIC      BIC    logLik deviance df.resid
##  7025.6   7062.6  -3504.8   7009.6      747
##
## Scaled residuals:
##      Min       1Q   Median       3Q      Max
## -2.05528 -0.35246 -0.08762  0.29583  2.48282
##
## Random effects:
## Groups      Name      Variance Std.Dev.
## codenumber (Intercept)  66.18    8.135
## Residual              580.70   24.098
## Number of obs: 755, groups:  codenumber, 101
##
## Fixed effects:
##
##              Estimate Std. Error    df t value Pr(>|t|)
## (Intercept)      1.4820     1.7570 212.1885   0.843  0.3999
## bilingualBilingual  0.2067     3.2735 198.9702   0.063  0.9497
## conditionTest     41.0656     2.1204 672.3464  19.366 <2e-16
## l3_overall        0.1572     0.3261  98.7294   0.482  0.6308
## age_c             0.9553     0.4714 100.0776   2.027  0.0454
## bilingualBilingual:conditionTest  2.5605     3.8259 670.3453   0.669  0.5036
##
## (Intercept)
## bilingualBilingual
## conditionTest      ***
## l3_overall
## age_c              *
## bilingualBilingual:conditionTest
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

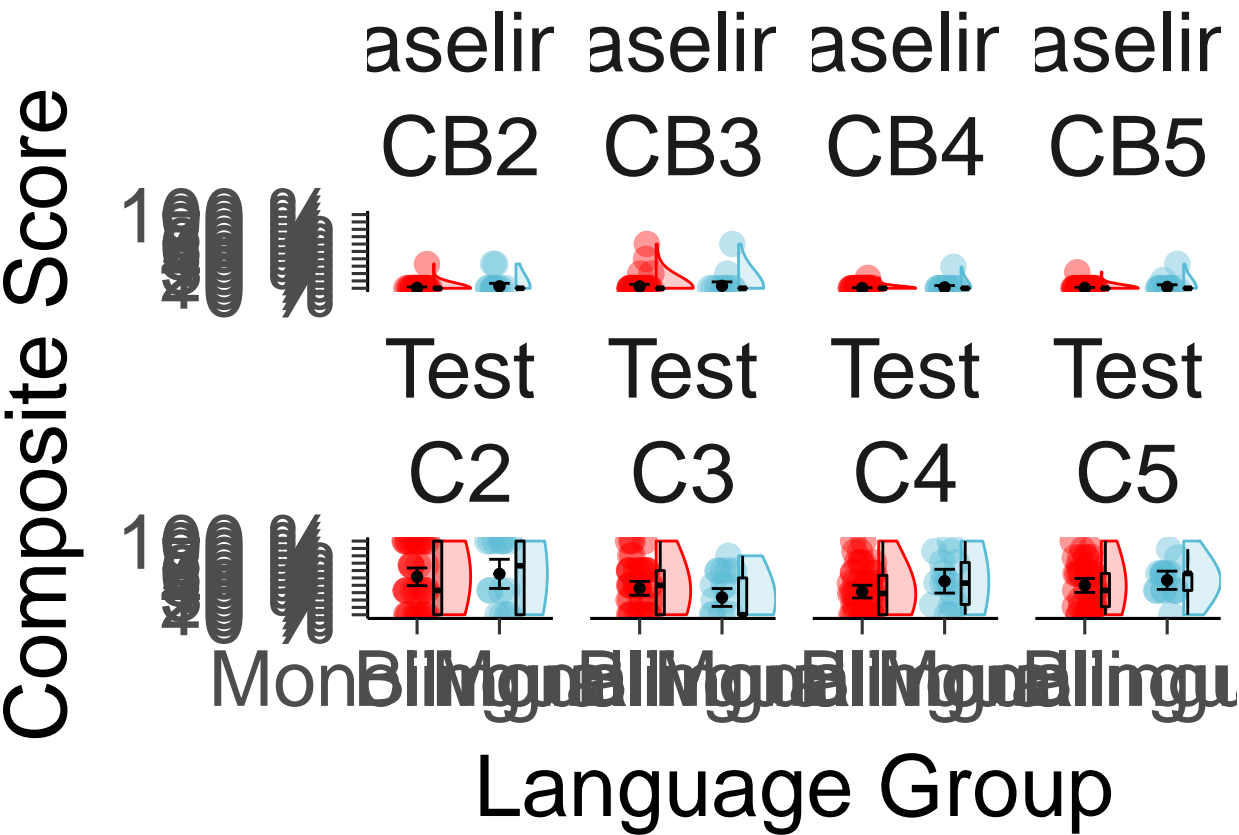
```



```
##
## Correlation of Fixed Effects:
##      (Intr) blnglB cndtnT l3_vrl age_c
## bilnglBlngl -0.507
## conditinTst -0.565  0.305
## l3_overall  -0.090 -0.279 -0.005
## age_c        0.002 -0.010  0.008  0.007
## blnglBlng:T  0.314 -0.540 -0.554 -0.008 -0.005
```

Table Summary

Graph



Score 1-Continuous

```
## # Comparison of Model Performance Indices
##
## Name | Model | AIC | AIC weights | AICc | AICc weights | BIC | BIC weights |
## -----
## rc_1 | lmerModLmerTest | 7027.765 | 0.192 | 7028.006 | 0.194 | 7069.405 | 0.036 |
## rc_2 | lmerModLmerTest | 7027.382 | 0.232 | 7027.802 | 0.215 | 7082.902 | 4.18e-05 |
## rc_3 | lmerModLmerTest | 7030.000 | 0.063 | 7030.356 | 0.060 | 7080.894 | 1.14e-04 |
## rc_4 | lmerModLmerTest | 7025.796 | 0.513 | 7025.989 | 0.532 | 7062.810 | 0.964 |

## Linear mixed model fit by maximum likelihood . t-tests use Satterthwaite's
```

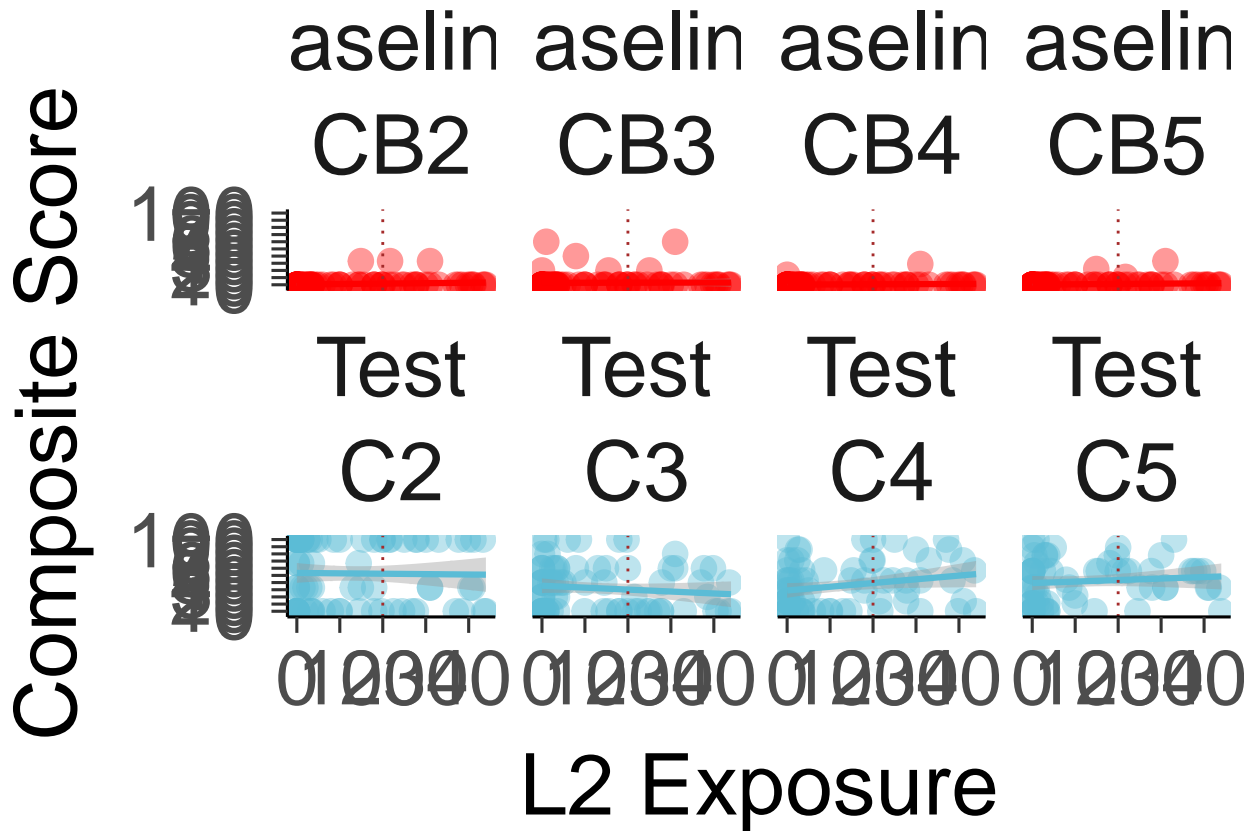
```

## method [lmerModLmerTest]
## Formula: total_comp_ratio_score_1 ~ l2_overall * condition + l3_overall +
## age_c + (1 | codenumber)
## Data: plan2
##
##      AIC      BIC    logLik deviance df.resid
## 7025.8    7062.8 -3504.9   7009.8      747
##
## Scaled residuals:
##      Min       1Q   Median       3Q      Max
## -2.03846 -0.34945 -0.08626  0.29791  2.47210
##
## Random effects:
## Groups      Name      Variance Std.Dev.
## codenumber (Intercept) 66.2      8.136
## Residual            580.9     24.102
## Number of obs: 755, groups: codenumber, 101
##
## Fixed effects:
##              Estimate Std. Error      df t value Pr(>|t|)
## (Intercept)      1.39738    1.97804 213.57281   0.706   0.4807
## l2_overall        0.01026    0.10333 200.20563   0.099   0.9210
## conditionTest     41.01452    2.40467 674.69360  17.056 <2e-16 ***
## l3_overall        0.16504    0.32488  99.08067   0.508   0.6126
## age_c             0.95572    0.47143 100.04358   2.027   0.0453 *
## l2_overall:conditionTest 0.06236    0.12186 671.91241   0.512   0.6090
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Correlation of Fixed Effects:
##      (Intr) l2_vrl cndtnT l3_vrl age_c
## l2_overall -0.643
## conditinTst -0.566  0.369
## l3_overall -0.034 -0.268  0.001
## age_c      -0.001 -0.003  0.012  0.005
## l2_vrll:cnT  0.381 -0.537 -0.679 -0.014 -0.011
##
## OK: No outliers detected.
##
## # Check for Multicollinearity
##
## Low Correlation
##
##      Term VIF      VIF 95% CI Increased SE Tolerance
##      l2_overall 1.57 [1.44, 1.75] 1.25 0.64
##      condition 1.86 [1.68, 2.07] 1.36 0.54
##      l3_overall 1.12 [1.06, 1.25] 1.06 0.89
##      age_c 1.00 [1.00, Inf] 1.00 1.00
## l2_overall:condition 2.31 [2.08, 2.60] 1.52 0.43
## Tolerance 95% CI
## [0.57, 0.69]
## [0.48, 0.59]
## [0.80, 0.95]
## [0.00, 1.00]

```

```
##      [0.39, 0.48]
```

Graph



Effect Size

```
##           t      df      d
## l2_overall    0.09702561 188.42935 0.01413651
## conditionTest 17.02799842 672.16135 1.31358091
## l3_overall    0.49673355  95.13068 0.10185754
## age_c         1.98434008  96.06307 0.40491874
## l2_overall:conditionTest 0.50654230 669.38406 0.03915688
```

Running the full and final models

```
## Linear mixed model fit by maximum likelihood . t-tests use Satterthwaite's
## method [lmerModLmerTest]
## Formula: total_comp_ratio_score_1 ~ l2_overall * condition + l3_overall +
## gender + edu_c + income_c + age_c + (1 | codenumber)
## Data: plan2
##
##      AIC      BIC    logLik deviance df.resid
##  7030.0   7080.9  -3504.0   7008.0     744
##
## Scaled residuals:
```

```

##      Min      1Q   Median      3Q      Max
## -2.03604 -0.36023 -0.09438  0.31167  2.54162
##
## Random effects:
##   Groups      Name      Variance Std.Dev.
##   codenumber (Intercept) 63.26   7.954
##   Residual              581.11  24.106
## Number of obs: 755, groups:  codenumber, 101
##
## Fixed effects:
##              Estimate Std. Error      df t value Pr(>|t|)
## (Intercept)      1.868e+00  2.321e+00  1.706e+02   0.805   0.4221
## l2_overall        1.779e-03  1.038e-01  1.985e+02   0.017   0.9863
## conditionTest      4.099e+01  2.406e+00  6.743e+02  17.037 <2e-16 ***
## l3_overall        1.642e-01  3.227e-01  9.882e+01   0.509   0.6121
## genderMale       -7.224e-01  2.456e+00  1.014e+02  -0.294   0.7693
## edu_c            -1.090e+00  9.304e-01  1.073e+02  -1.172   0.2438
## income_c         -3.189e-05  4.039e-05  1.006e+02  -0.789   0.4317
## age_c             9.610e-01  4.701e-01  9.957e+01   2.044   0.0436 *
## l2_overall:conditionTest  6.425e-02  1.219e-01  6.717e+02   0.527   0.5983
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Correlation of Fixed Effects:
##      (Intr) l2_vrl cndtnT l3_vrl gndrMl edu_c  incm_c age_c
## l2_overall  -0.511
## conditinTst -0.493  0.369
## l3_overall  -0.065 -0.261  0.003
## genderMale  -0.525 -0.074  0.017  0.060
## edu_c       -0.082  0.001 -0.003 -0.030  0.171
## income_c    -0.032  0.141  0.017  0.035 -0.101  0.130
## age_c       0.058  0.000  0.009 -0.005 -0.104  0.026 -0.027
## l2_vrll:cnT  0.332 -0.536 -0.679 -0.015 -0.011 -0.004 -0.011 -0.009
## fit warnings:
## Some predictor variables are on very different scales: consider rescaling

## Linear mixed model fit by maximum likelihood . t-tests use Satterthwaite's
## method [lmerModLmerTest]
## Formula: total_comp_ratio_score_1 ~ l2_overall * condition + l3_overall +
##         age_c + (1 | codenumber)
## Data: plan2
##
##      AIC      BIC    logLik deviance df.resid
##  7025.8   7062.8  -3504.9   7009.8     747
##
## Scaled residuals:
##      Min      1Q   Median      3Q      Max
## -2.03846 -0.34945 -0.08626  0.29791  2.47210
##
## Random effects:
##   Groups      Name      Variance Std.Dev.
##   codenumber (Intercept) 66.2     8.136
##   Residual              580.9    24.102
## Number of obs: 755, groups:  codenumber, 101

```

```
##
## Fixed effects:
##               Estimate Std. Error      df t value Pr(>|t|)
## (Intercept)      1.39738    1.97804 213.57281   0.706   0.4807
## l2_overall        0.01026    0.10333 200.20563   0.099   0.9210
## conditionTest     41.01452    2.40467 674.69360  17.056 <2e-16 ***
## l3_overall        0.16504    0.32488  99.08067   0.508   0.6126
## age_c             0.95572    0.47143 100.04358   2.027   0.0453 *
## l2_overall:conditionTest 0.06236    0.12186 671.91241   0.512   0.6090
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Correlation of Fixed Effects:
##           (Intr) l2_vrl cndtnT l3_vrl age_c
## l2_overall  -0.643
## conditinTst -0.566  0.369
## l3_overall  -0.034 -0.268  0.001
## age_c       -0.001 -0.003  0.012  0.005
## l2_vrll:cnT  0.381 -0.537 -0.679 -0.014 -0.011
```

Table Summary

Score 1-LPA

```
## OK: No outliers detected.
```

```
## Linear mixed model fit by maximum likelihood . t-tests use Satterthwaite's
## method [lmerModLmerTest]
## Formula: total_comp_ratio_score_1 ~ profiles * condition + age_c + (1 |
##   codenumber)
## Data: plan2_plus_lpa
##
##      AIC      BIC   logLik deviance df.resid
## 7025.5   7067.2  -3503.8   7007.5     746
##
## Scaled residuals:
##      Min       1Q   Median       3Q      Max
## -2.12091 -0.33504 -0.08233  0.29364  2.51108
##
## Random effects:
## Groups      Name      Variance Std.Dev.
## codenumber (Intercept) 63.87    7.992
## Residual              580.38   24.091
## Number of obs: 755, groups:  codenumber, 101
##
## Fixed effects:
##               Estimate Std. Error      df t value Pr(>|t|)
## (Intercept)      1.2423    1.9148 215.3166   0.649   0.5172
## profilesMedium      1.9821    3.3846 213.8520   0.586   0.5587
## profilesHigh     -0.1087    4.0899 214.6214  -0.027   0.9788
## conditionTest     40.3485    2.3367 674.3562  17.267 <2e-16 ***
## age_c             0.8915    0.4696  99.9861   1.898   0.0605 .
```

```
## profilesMedium:conditionTest 4.3269 4.1017 669.0109 1.055 0.2918
## profilesHigh:conditionTest 1.9868 5.0425 670.0128 0.394 0.6937
## ---
## Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Correlation of Fixed Effects:
## (Intr) prflsM prflsH cndtnT age_c prfM:T
## profilesMdm -0.567
## profilesHgh -0.468 0.264
## conditinTst -0.570 0.322 0.267
## age_c 0.025 -0.067 0.013 0.013
## prflsMdm:cT 0.324 -0.570 -0.152 -0.570 -0.011
## prflsHgh:cT 0.264 -0.149 -0.563 -0.463 -0.007 0.264
```

Comparison of Model Performance Indices

```
##
## Name | Model | AIC | AIC weights | AICc | AICc weights | BIC | BIC weights |
## -----
## rc_1 | lmerModLmerTest | 7026.569 | 0.239 | 7026.865 | 0.240 | 7072.836 | 0.054 |
## rc_2 | lmerModLmerTest | 7027.365 | 0.160 | 7027.856 | 0.146 | 7087.512 | 3.51e-05 |
## rc_3 | lmerModLmerTest | 7027.505 | 0.149 | 7027.800 | 0.151 | 7073.772 | 0.034 |
## rc_4 | lmerModLmerTest | 7029.601 | 0.052 | 7030.021 | 0.050 | 7085.121 | 1.16e-04 |
## rc_5 | lmerModLmerTest | 7025.540 | 0.399 | 7025.782 | 0.413 | 7067.181 | 0.912 |
```

Effect Size

```
## t df d
## profilesMedium 0.5762642 201.19710 0.081253251
## profilesHigh -0.0270118 201.90439 -0.003801987
## conditionTest 17.2261494 670.83722 1.330177602
## age_c 1.8584358 96.00709 0.379337612
## profilesMedium:conditionTest 1.0478889 665.59648 0.081234354
## profilesHigh:conditionTest 0.3897111 666.51428 0.030190343
```

Running the full and final models

```
## Linear mixed model fit by maximum likelihood . t-tests use Satterthwaite's
## method [lmerModLmerTest]
## Formula: total_comp_ratio_score_1 ~ profiles * condition + gender + edu_c +
## income_c + age_c + (1 | codenumber)
## Data: plan2_plus_lpa
##
## AIC BIC logLik deviance df.resid
## 7029.6 7085.1 -3502.8 7005.6 743
##
## Scaled residuals:
## Min 1Q Median 3Q Max
## -2.11843 -0.35595 -0.08449 0.29854 2.57990
##
## Random effects:
## Groups Name Variance Std.Dev.
## codenumber (Intercept) 60.74 7.794
```

```

## Residual          580.63   24.096
## Number of obs: 755, groups:  codenumber, 101
##
## Fixed effects:
##
##              Estimate Std. Error      df t value Pr(>|t|)
## (Intercept)      1.696e+00  2.265e+00  1.697e+02   0.749   0.4549
## profilesMedium      1.873e+00  3.362e+00  2.159e+02   0.557   0.5780
## profilesHigh      -6.714e-01  4.140e+00  2.098e+02  -0.162   0.8713
## conditionTest       4.031e+01  2.338e+00  6.740e+02  17.246 <2e-16
## genderMale      -6.830e-01  2.436e+00  1.009e+02  -0.280   0.7798
## edu_c      -1.071e+00  9.216e-01  1.070e+02  -1.162   0.2478
## income_c      -3.662e-05  4.028e-05  1.004e+02  -0.909   0.3654
## age_c       8.970e-01  4.679e-01  9.950e+01   1.917   0.0581
## profilesMedium:conditionTest  4.368e+00  4.103e+00  6.688e+02   1.065   0.2874
## profilesHigh:conditionTest  2.082e+00  5.043e+00  6.698e+02   0.413   0.6799
##
## (Intercept)
## profilesMedium
## profilesHigh
## conditionTest      ***
## genderMale
## edu_c
## income_c
## age_c      .
## profilesMedium:conditionTest
## profilesHigh:conditionTest
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Correlation of Fixed Effects:
##      (Intr) prflsM prflsH cndtnT gndrMl edu_c  incm_c age_c  prfM:T
## profilesMdm -0.476
## profilesHgh -0.347  0.265
## conditinTst -0.492  0.324  0.265
## genderMale  -0.540 -0.004 -0.091  0.017
## edu_c      -0.093  0.004  0.009 -0.002  0.171
## income_c   -0.002  0.037  0.183  0.015 -0.112  0.134
## age_c       0.081 -0.067  0.017  0.010 -0.107  0.025 -0.020
## prflsMdm:cT  0.283 -0.574 -0.150 -0.570 -0.015 -0.002 -0.002 -0.009
## prflsHgh:cT  0.224 -0.150 -0.558 -0.463 -0.001 -0.009 -0.009 -0.007  0.264
## fit warnings:
## Some predictor variables are on very different scales: consider rescaling

## Linear mixed model fit by maximum likelihood . t-tests use Satterthwaite's
## method [lmerModLmerTest]
## Formula: total_comp_ratio_score_1 ~ profiles * condition + age_c + (1 |
##          codenumber)
## Data: plan2_plus_lpa
##
##      AIC      BIC    logLik deviance df.resid
##  7025.5   7067.2  -3503.8   7007.5     746
##
## Scaled residuals:
##      Min      1Q   Median      3Q      Max

```

```

## -2.12091 -0.33504 -0.08233 0.29364 2.51108
##
## Random effects:
## Groups Name Variance Std.Dev.
## codenumber (Intercept) 63.87 7.992
## Residual 580.38 24.091
## Number of obs: 755, groups: codenumber, 101
##
## Fixed effects:
## Estimate Std. Error df t value Pr(>|t|)
## (Intercept) 1.2423 1.9148 215.3166 0.649 0.5172
## profilesMedium 1.9821 3.3846 213.8520 0.586 0.5587
## profilesHigh -0.1087 4.0899 214.6214 -0.027 0.9788
## conditionTest 40.3485 2.3367 674.3562 17.267 <2e-16 ***
## age_c 0.8915 0.4696 99.9861 1.898 0.0605 .
## profilesMedium:conditionTest 4.3269 4.1017 669.0109 1.055 0.2918
## profilesHigh:conditionTest 1.9868 5.0425 670.0128 0.394 0.6937
## ---
## Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Correlation of Fixed Effects:
## (Intr) prflsM prflsH cndtnT age_c prfM:T
## profilesMdm -0.567
## profilesHgh -0.468 0.264
## conditinTst -0.570 0.322 0.267
## age_c 0.025 -0.067 0.013 0.013
## prflsMdm:cT 0.324 -0.570 -0.152 -0.570 -0.011
## prflsHgh:cT 0.264 -0.149 -0.563 -0.463 -0.007 0.264

```

Table Summary

Graph

Composite Score

