

# Bigger is Better - Supplementary Analysis

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## Supplemental Analyses:

This analysis follows a similar format to what was conducted by Scott et al. (2021). However, our factors were created using an EFA rather than PCA. Size was left out of the EFA, and allowed to be its own covariate in our model. Scales were allowed to cross-load on multiple factors so long as they were significant predictors of that factor in the EFA and the loading was greater than 0.3. Factors were named after the scale that loaded highest onto that factor.

## RT

```
# paran(WR.data[,c(2,3,5:10,12)], cfa = T)

# print(efa(WR.data[,c(2,3,5:10,12)], nfactors = 4), cutoff = .3)

sem_model = "
  IMAG =~ Imagability + Concreteness + Familiarity
  GEND =~ Gender + Familiarity
  LIKE =~ Likability + Arousal + Pleasantness + Valence
  EMOT =~ Emotionality + Arousal

  RT ~ d*Size + EMOT + IMAG + GEND + LIKE
  EMOT ~ i1*Size
  IMAG ~ i2*Size
  GEND ~ i3*Size
  LIKE ~ i4*Size

"

sem_analysis = sem(sem_model,
  data = LDT.finalData,
  cluster = "SubID")
```

```
## Warning in lav_options_set(opt): observed.information for ALL test statistics
## is set to h1.
```

```
## Warning in lav_data_full(data = data, group = group, cluster = cluster, :
## lavaan WARNING: some observed variances are (at least) a factor 1000 times
## larger than others; use varTable(fit) to investigate
```

```
## Warning in lav_object_post_check(object): lavaan WARNING: some estimated ov
## variances are negative
```

```
summary(sem_analysis, std = T)
```

```
## lavaan 0.6.15 ended normally after 179 iterations
```

```
##
```

```
## Estimator ML
## Optimization method NLMINB
## Number of model parameters 40
##
## Used Total
## Number of observations 8820 9720
## Number of clusters [SubID] 108
##
```

```
## Model Test User Model:
```

```
## Standard Scaled
## Test Statistic 16675.448 79481.403
## Degrees of freedom 35 35
## P-value (Chi-square) 0.000 0.000
## Scaling correction factor 0.210
## Yuan-Bentler correction (Mplus variant)
## Observed information based on H1
##
```

```
## Parameter Estimates:
```

```
##
```

```
## Standard errors Robust.cluster
## Information Observed
## Observed information based on Hessian
##
```

```
## Latent Variables:
```

```
## Estimate Std.Err z-value P(>|z|) Std.lv Std.all
## IMAG =~
## Imagability 1.000 0.638 1.055
## Concreteness 0.897 0.004 203.964 0.000 0.573 0.810
## Familiarity 0.574 0.002 260.195 0.000 0.366 0.667
## GEND =~
## Gender 1.000 0.449 0.542
## Familiarity -0.482 0.005 -94.456 0.000 -0.217 -0.395
## LIKE =~
## Likability 1.000 0.998 0.980
## Arousal 0.173 0.001 216.726 0.000 0.173 0.276
## Pleasantness 1.065 0.001 1216.922 0.000 1.063 0.990
## Valence 0.987 0.001 1327.427 0.000 0.985 0.983
## EMOT =~
## Emotionality 1.000 0.581 0.860
## Arousal 0.907 0.011 78.914 0.000 0.527 0.844
##
```

```
## Regressions:
```

```
## Estimate Std.Err z-value P(>|z|) Std.lv Std.all
## RT ~
## Size (d) -8.969 2.238 -4.007 0.000 -8.969 -0.162
## EMOT -9.046 1.336 -6.772 0.000 -5.257 -0.052
## IMAG -16.882 1.434 -11.777 0.000 -10.772 -0.106
```

```

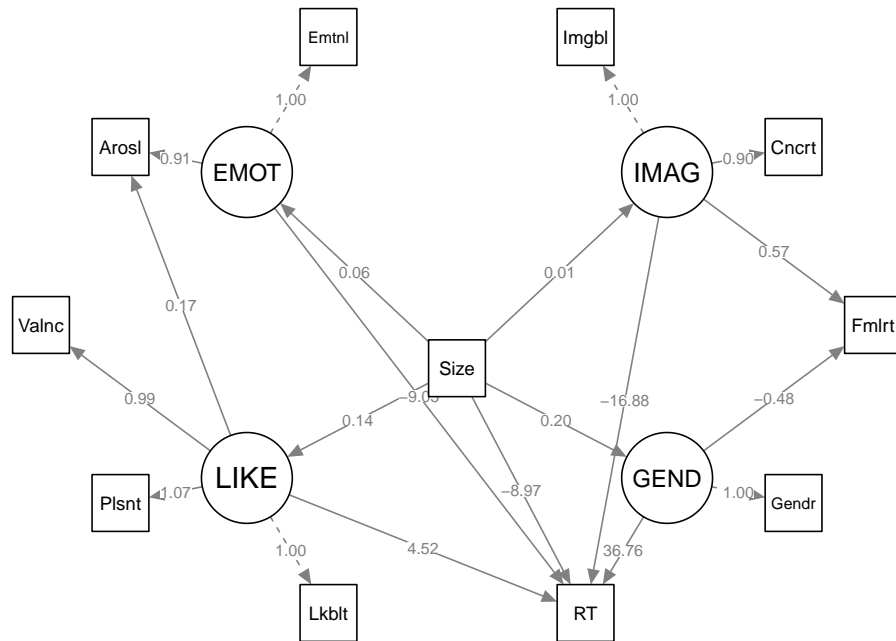
##      GEND      36.765   10.418    3.529    0.000   16.520    0.163
##      LIKE      4.523    1.273    3.552    0.000    4.513    0.045
##      EMOT ~
##      Size      (i1)    0.064    0.001   60.258    0.000    0.111    0.202
##      IMAG ~
##      Size      (i2)    0.009    0.002    5.549    0.000    0.015    0.027
##      GEND ~
##      Size      (i3)    0.203    0.002  135.165    0.000    0.452    0.825
##      LIKE ~
##      Size      (i4)    0.139    0.002   72.636    0.000    0.139    0.254
##
## Intercepts:
##      Estimate Std.Err z-value P(>|z|) Std.lv Std.all
##      .Imagability    5.925   0.008  705.951   0.000    5.925    9.795
##      .Concreteness    5.417   0.007  753.385   0.000    5.417    7.661
##      .Familiarity     6.087   0.006  978.272   0.000    6.087   11.095
##      .Gender          2.278   0.007  311.944   0.000    2.278    2.747
##      .Likability      4.169   0.010  413.343   0.000    4.169    4.092
##      .Arousal         2.873   0.005  573.822   0.000    2.873    4.597
##      .Pleasantness    3.931   0.010  380.862   0.000    3.931    3.663
##      .Valence         4.028   0.010  409.319   0.000    4.028    4.021
##      .Emotionality    3.182   0.005  600.485   0.000    3.182    4.706
##      .RT             529.337   6.478   81.715   0.000  529.337    5.229
##      .IMAG            0.000           0.000   0.000    0.000    0.000
##      .GEND            0.000           0.000   0.000    0.000    0.000
##      .LIKE            0.000           0.000   0.000    0.000    0.000
##      .EMOT            0.000           0.000   0.000    0.000    0.000
##
## Variances:
##      Estimate Std.Err z-value P(>|z|) Std.lv Std.all
##      .Imagability    -0.041   0.001  -37.321   0.000   -0.041   -0.113
##      .Concreteness     0.172   0.002  112.448   0.000    0.172    0.345
##      .Familiarity     0.123   0.001  146.807   0.000    0.123    0.410
##      .Gender          0.486   0.003  173.251   0.000    0.486    0.706
##      .Likability      0.042   0.000  116.261   0.000    0.042    0.040
##      .Arousal         0.073   0.004   20.902   0.000    0.073    0.188
##      .Pleasantness    0.022   0.000  107.801   0.000    0.022    0.019
##      .Valence         0.034   0.000  145.979   0.000    0.034    0.033
##      .Emotionality    0.119   0.004   29.004   0.000    0.119    0.261
##      .RT             9989.927 1036.209    9.641   0.000 9989.927    0.975
##      .IMAG            0.407   0.003  123.747   0.000    0.999    0.999
##      .GEND            0.064   0.002   37.414   0.000    0.319    0.319
##      .LIKE            0.932   0.005  204.769   0.000    0.936    0.936
##      .EMOT            0.324   0.004   79.742   0.000    0.959    0.959

```

```

semPaths(sem_analysis, what = "paths",
         whatLabels = "est", layout = "circle",
         exoVar = F, exoCov = F, residuals = F,
         nCharNodes = 5, intercepts = F)

```



### Take-away

The direct effect of size on RT was such that a one unit increase in size resulted in a -8.969 ms change in RT.

The total indirect effect of size on RT, including paths through each latent factor constructed was such that a one unit increase in size resulted in a 7.355041 ms change in RT.

The total effect of size on RT, including both direct and indirect effects, was such that a one unit increase in size resulted in a -1.614 ms change in RT.

### Accuracy

The accuracy effect model failed to converge, likely due to a ceiling effect for accuracy.