


The Output

```
> anova(model.null, model.full)
refitting model(s) with ML (instead of REML)
Data: DV
Models:
object: Gaze ~ (1 + Condition | Subject) + (1 + Condition | Item)
..1: Gaze ~ Condition + (1 + Condition | Subject) + (1 + Condition |
..1: Item)
      Df    AIC    BIC logLik deviance Chisq Chi Df Pr(>Chisq)
object 14 8773.4 8834.4 -4372.7   8745.4
..1     16 8771.2 8840.8 -4369.6   8739.2 6.236     2   0.04425 *
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```



For model comparisons, a different parameter estimator must be used (R will do this for you). REML should be used to estimate parameters when you report them.


- Our two models differ significantly from each other. The one that fits our data the best has the lower AIC value. AIC is the Akaike Information Criterion and measures how much ‘information’ is not captured by our model (values that are relatively lower are better). NOTE - absolute AIC values cannot be interpreted - they have to be compared with the AIC value of another model.

```

Random effects:
Groups   Name                Variance Std.Dev. Corr
Subject  (Intercept)          108205   328.95
          ConditionNeutral    2589    50.88  -1.00
          ConditionPositive    6425    80.16  -1.00  1.00
Item      (Intercept)          32985   181.62
          ConditionNeutral    1296    36.00   0.00
          ConditionPositive    3897    62.42  -0.54  0.84
Residual                          204916  452.68
Number of obs: 574, groups: Subject, 24; Item, 24

Fixed effects:
              Estimate Std. Error   df t value Pr(>|t|)
(Intercept)    1083.76     83.40  30.15  12.994 6.88e-14 ***
ConditionNeutral  101.04     48.05  52.01   2.103  0.0403 *
ConditionPositive 123.54     50.70  22.73   2.437  0.0231 *
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

```



- This is what we're mainly interested in. We know the model itself is significantly better than the null model. These comparisons tell us what differences are driving the effect.

- Think of these like the contrasts that are used to interpret significant ANOVAs. In this case, the Neutral and Positive conditions are each being compared to the Negative condition (or the intercept of the regression line). The estimates tell us that the intercept is 1084 (which is the Negative condition mean). The Neutral mean is $1084 + 101$, while the Positive mean is $1084 + 124$.