

# By Items

```
> model1 <- aov_4(RT ~ Sentence * Context + (1 + Sentence * Context | Item),  
data = DV, na.rm = TRUE)
```

```
> anova (model1)  
Anova Table (Type 3 tests)
```

Response: RT

	num	Df	den	Df	MSE	F	ges	Pr(>F)
Sentence		1		27	203164	0.1221	0.0012553	0.72951
Context		1		27	39844	4.0013	0.0080150	0.05561 .
Sentence:Context		1		27	40168	5.7687	0.0116070	0.02346 *

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Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

- With the same datafile and just by changing *one* word in the analysis code.

# Interpreting Interactions

We can build the model as before and pass the model to the function *emmeans* (remember to load the *emmeans* package) and ask for pairwise comparisons with no correction - we need to work out the Bonferroni corrected value ourselves...

```
> emmeans(model, pairwise ~ Sentence * Context, adjust = "none")
```

```
$emmeans
```

Sentence	Context	emmean	SE	df	lower.CL	upper.CL
Positive	Positive	1579.181	57.78624	137.64	1464.917	1693.445
Negative	Positive	1627.877	57.78624	137.64	1513.614	1742.141
Positive	Negative	1594.889	57.78624	137.64	1480.625	1709.152
Negative	Negative	1473.962	57.78624	137.64	1359.698	1588.225

Confidence level used: 0.95

```
$contrasts
```

contrast	estimate	SE	df	t.ratio	p.value
Positive, Positive - Negative, Positive	-48.69643	60.33730	115.72	-0.807	0.4213
Positive, Positive - Positive, Negative	-15.70794	55.39009	117.95	-0.284	0.7772
Positive, Positive - Negative, Negative	105.21905	59.82499	115.06	1.759	0.0813
Negative, Positive - Positive, Negative	32.98849	59.82499	115.06	0.551	0.5824
Negative, Positive - Negative, Negative	153.91548	55.39009	117.95	2.779	0.0064
Positive, Negative - Negative, Negative	120.92698	60.33730	115.72	2.004	0.0474