One-way Between Subjects

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Type | SS | df | MS | F |
| Model | My Level – Grand Mean  How different is my level from the overall average? | Levels – 1 | SS / df | MSm / MS r |
| Residual | Me – My Level Mean  How different am I from my level? | (n-1)+(n-1)+(n-1)… | SS/df |  |
| Total | Me – Grand Mean  How different am I from the overall average? | N - 1 |  |  |

Two-way Between Subjects

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Type | SS | df | MS | F |
| SSmodel | My condition mean – Grand Mean  How different is my condition from the overall average?  We break this down into 3 parts: due to var1, due to var2, and the left over is the interaction |  |  |  |
| Var 1 Model | My Level – Grand Mean  How different is my level from the overall average? | Levels – 1 | SS / df | MSmodel1 / MS r |
| Var 2 Model | My Level – Grand Mean  How different is my level from the overall average? | Levels – 1 | SS / df | MSmodel2 / MS r |
| Interaction Model | SSmodel – SSvar1 – SSvar2  How much of the differences in conditions is due to just the interaction, not the levels? | (Levels-1) \*  (Levels-1) | SS / df | MSinteraction / MS r |
| Residual | Me – My Condition Mean  How different am I from my condition group? | (n-1)+(n-1)+(n-1)… | SS/df |  |
| Total | Me – Grand Mean  How different am I from the overall average? | N - 1 |  |  |

One-way Repeated Measures

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Type | SS | df | MS | F |
| Between | SStotal – SSwithin  Individual differences between participants | Dftotal-dfwithin |  |  |
| Within | Me – My Level Mean  How different am I from my level?  Breaks down into model and residual (so df add up too) | (levels-1)(n) |  |  |
| Model | My Level – Grand Mean  How different is my level from the overall average? | Levels – 1 | SS / df | MSm / MS r |
| Residual | SSwithin – Ssmodel  Variance controlling for the correlation between levels (i.e. what’s not due to the treatment) | Dfwithin – dfmodel | SS/df |  |
| Total | Me – Grand Mean  How different am I from the overall average? | (Groups\*N)-1 |  |  |

For two-way repeated measures:

* Essentially the SSwithin is broken down into 3 separate mini-ANOVAs
  + One for variable 1 main effect (Model + Residual)
  + One for variable 2 main effect (Model + Residual)
  + One for interaction effect (Model + Residual)
* You will see three different error terms, each one based on the DF for those effects (i.e. main effect or interaction).
* The ideas above are still the same though – Model = Level – GM, Residual = left over stuff that is not due to treatment OR individual differences in participants (that’s between subjects SS). Total and between remain the same.