Results

Relationships, Prediction, and Group Comparisons

Welcome to Statkat! This tool will help you to find an appropriate statistical method given the measurement level of your data. Make sure you have correctly defined the measurement levels of your variables on the Data tab. You can change the measurement level of a variable via the Setup button on the Data tab, or by double clicking on a column header of interest. You have selected the Relationships, Prediction, and Group Comparisons option. This is the place to be if you are interested in

- the relationship between two or more variables, or
- predicting one variable from other variables, or
- the difference between independent (unrelated) groups on a certain variable.

To get started, drop a variable in the box below Variable 1 / Dependent Variable, and one or more variables in the box below Variable 2 / Independent Variables. Our tool will then come up with a statistical method that may be appropriate for your data! In addition, you can drop one or more variables in the box below Control Variables. Control variables are variables that you are not particularly interested in, but which may be related to the dependent variable and possibly also to the independent variables. In experiments (with random assignment), control variables are often included to increase power. In observational studies, control variables are often included mainly to equate subjects on the control variables. This prevents the control variables from confounding the relationships between the independent variables and the dependent variable. If your research question does not make a clear distinction between an independent variable and a dependent variable, the decision of which variable to define as Variable 1/Dependent Variable and which as Variable 2/Independent Variables can be arbitrary. But doesn't this decision affect the recommended method? Well, in some cases it does affect the primary method recommendation, but if a simpler method can be performed by flipping the two variables, this is usually mentioned. It is then up to you which of the recommended methods you prefer. It is important to keep in mind here that none of the correlational statistical techniques can say anything about causality anyway (not even a method like regression analysis), so even if you do make a distinction between an independent and dependent variable, the statistical method will only say something about association, not causation. Note: Our advice is based on the measurement level of your data and on the number of variables entered. There can be details related to your data, task, or assignment that may render the advice moot. Always check the assumptions made by the statistical method before interpreting the results. We always try to come up with the least complicated method that might be applicable given your data. Keep in mind that there may be other, more advanced, methods that might be applicable as well.

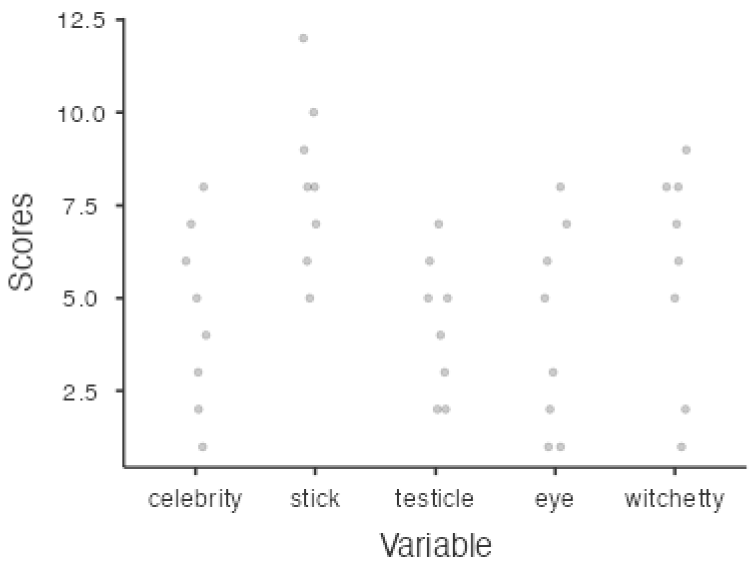
Repeated Measurements

You have entered several related numeric variables. Hence, a repeated measures ANOVA seems to be a good option for you! In order to run this analysis in jamovi, go to: ANOVA > Repeated Measures ANOVA

- Under Repeated Measures Factors, replace the name RM Factor 1 with a more appropriate name (e.g., 'measurement point'). Then give a name to each level (e.g., measurement 1, measurement 2, etc.). Make sure that the number of levels you have defined equals the number of related variables you have
- Drag the related variables to the box below Repeated Measures Cells, one per level

Alternatively, if distributional assumptions are violated, you could use the non-parametric [Friedman test](). Click on the link to learn more about this test!

Scatter Plot



Descriptives

Descriptives

N
Missing
Mean
Median
Standard deviation
Minimum
Maximum

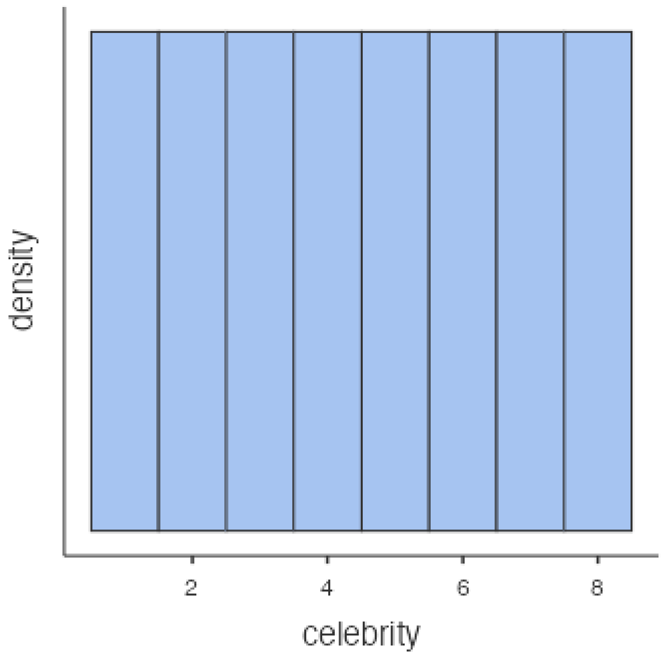
Descriptives

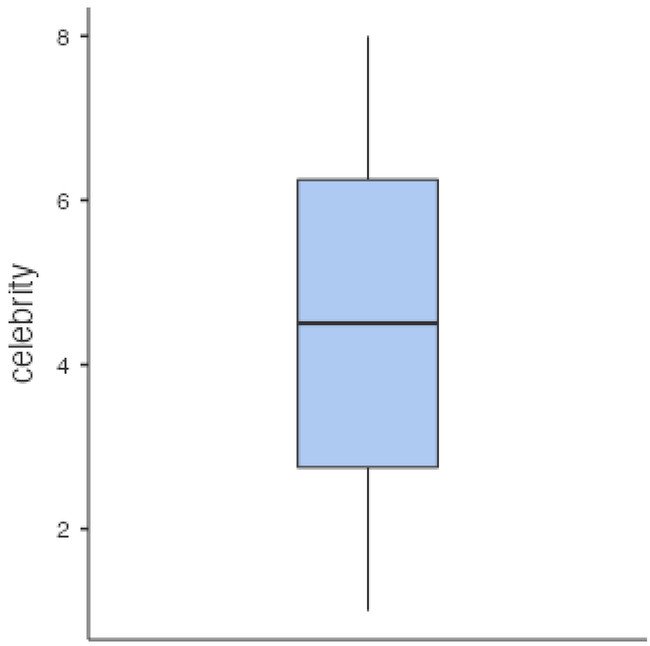
Descriptives

	celebrity	stick	testicle	eye	witchetty
N	8	8	8	8	8
Missing	0	0	0	0	0
Mean	4.50	8.13	4.25	4.13	5.75
Median	4.50	8.00	4.50	4.00	6.50
Standard deviation	2.45	2.23	1.83	2.75	2.92
Minimum	1.00	5.00	2.00	1.00	1.00
Maximum	8.00	12.0	7.00	8.00	9.00
Skewness	0.00	0.409	0.0697	0.157	-0.778
Std. error skewness	0.752	0.752	0.752	0.752	0.752
Shapiro-Wilk W	0.975	0.982	0.939	0.913	0.901
Shapiro-Wilk p	0.933	0.970	0.600	0.373	0.292

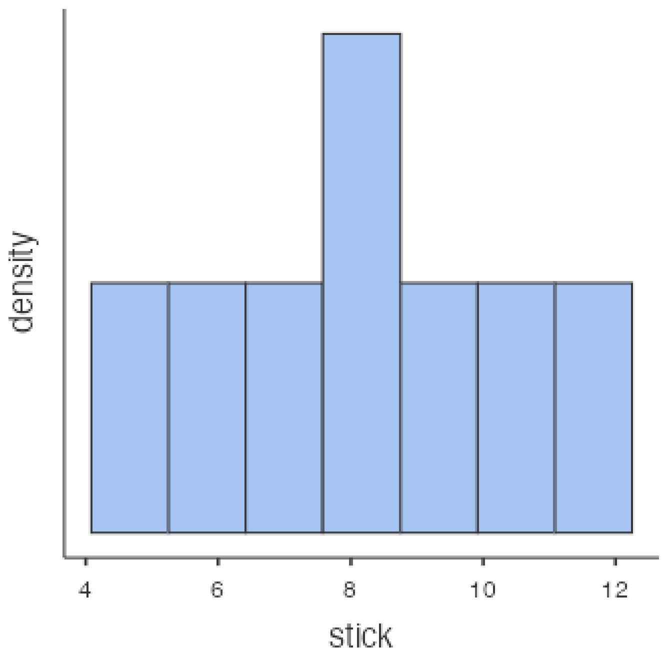
Plots

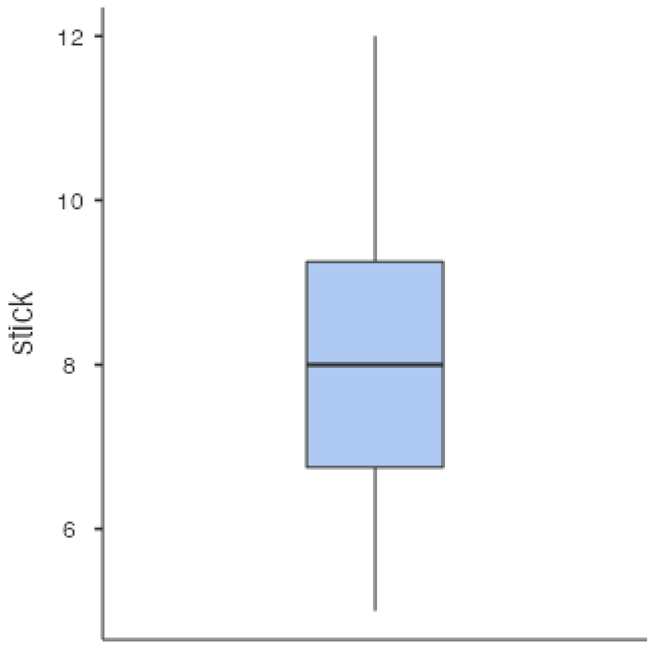
celebrity



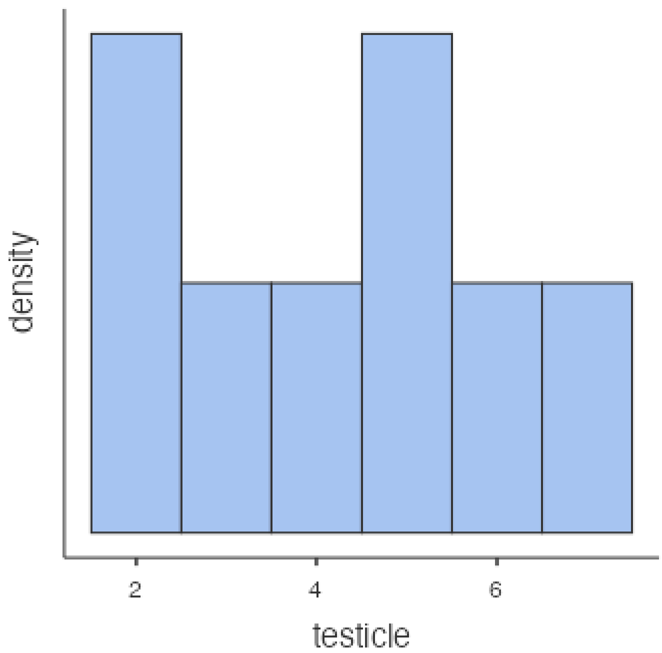


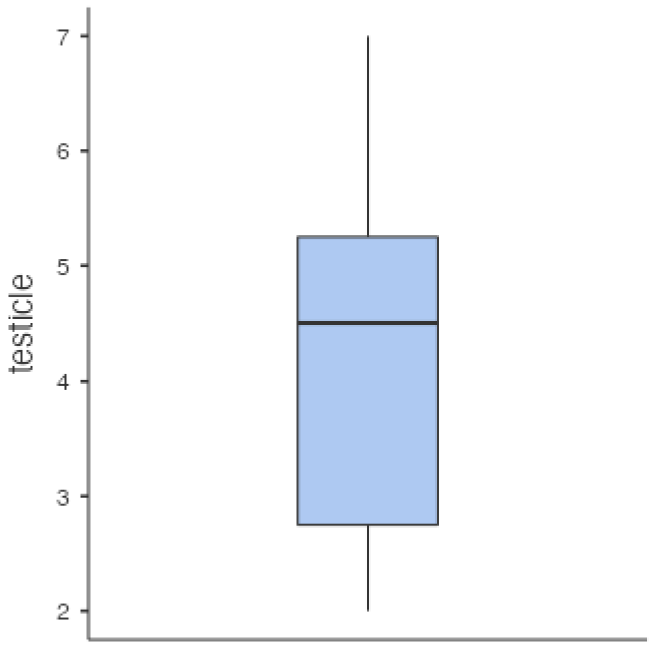
stick



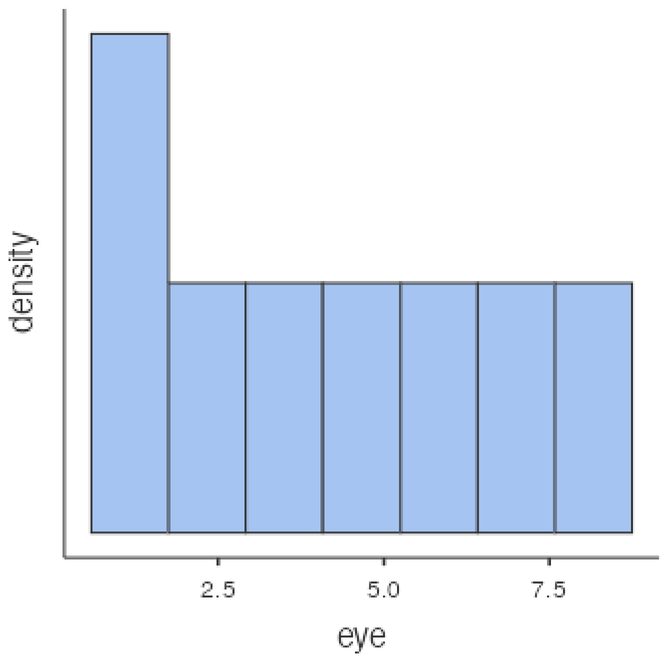


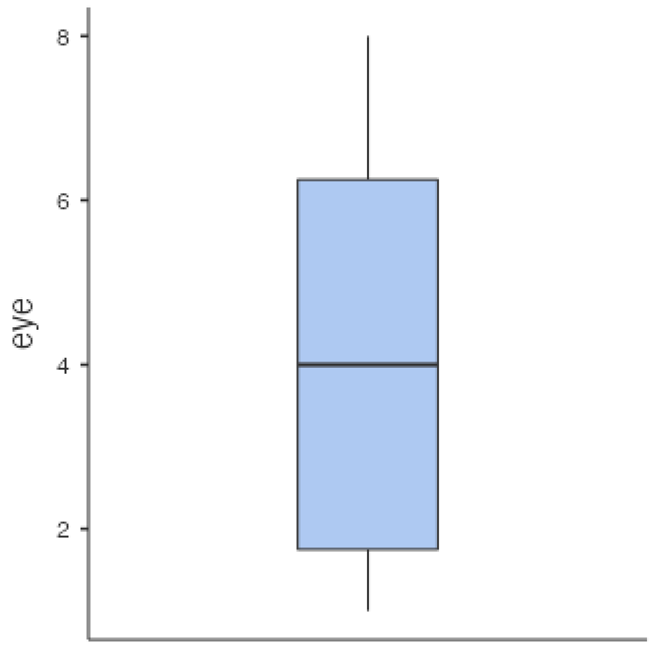
testicle



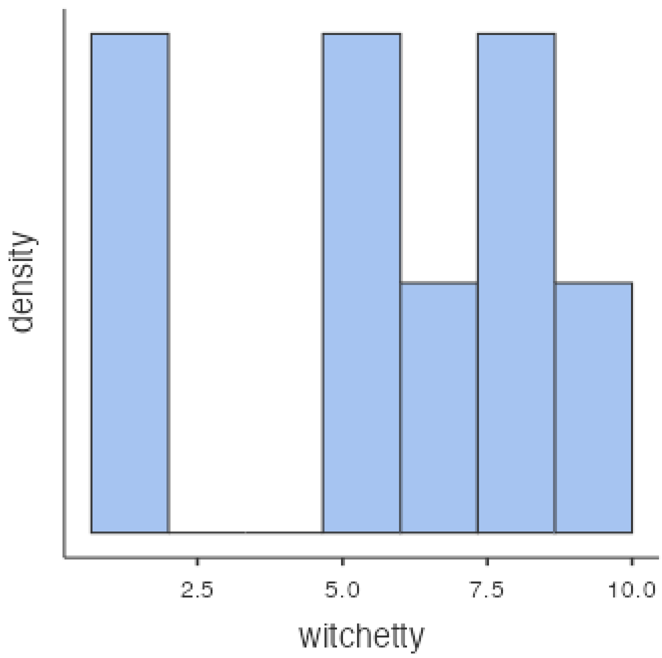


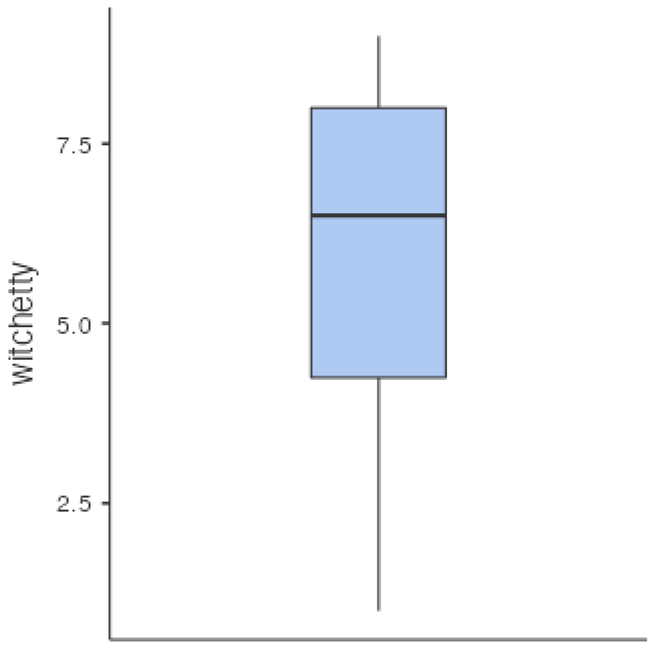
eye





witchetty





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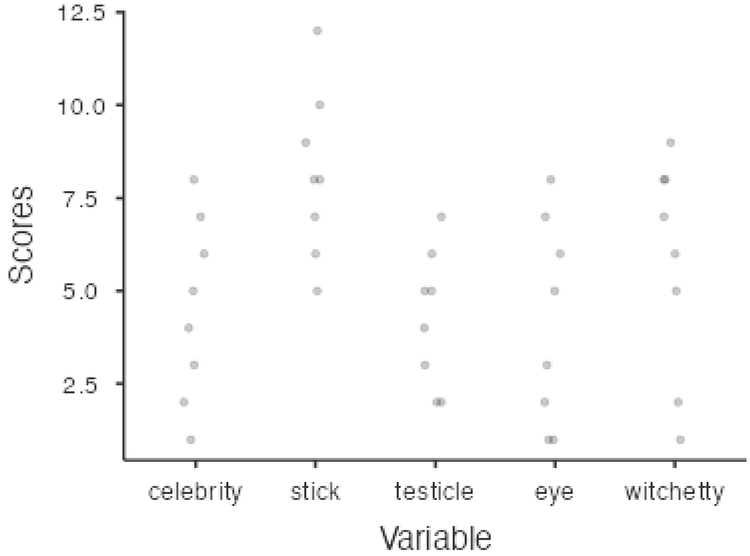

Repeated Measures ANOVA

Within Subjects Effects

	Sphericity Correction	Sum of Squares	df	Mean Square	F	p	η^2_G	η^2
Food	None	83.1	3	27.71	3.79	0.026	0.327	0.327
	Greenhouse-Geisser	83.1	1.60	52.0	3.79	0.063	0.327	0.327
	Huynh-Feldt	83.1	2.00	41.6	3.79	0.048	0.327	0.327
Residual	None	153.4	21	7.30				
	Greenhouse-Geisser	153.4	11.19	13.7				
	Huynh-Feldt	153.4	13.98	11.0				

Note. Type 3 Sums of Squares

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Between Subjects Effects

	Sum of Squares	df	Mean Square	F	p	η^2_G	η^2
Residual	17.4	7	2.48				

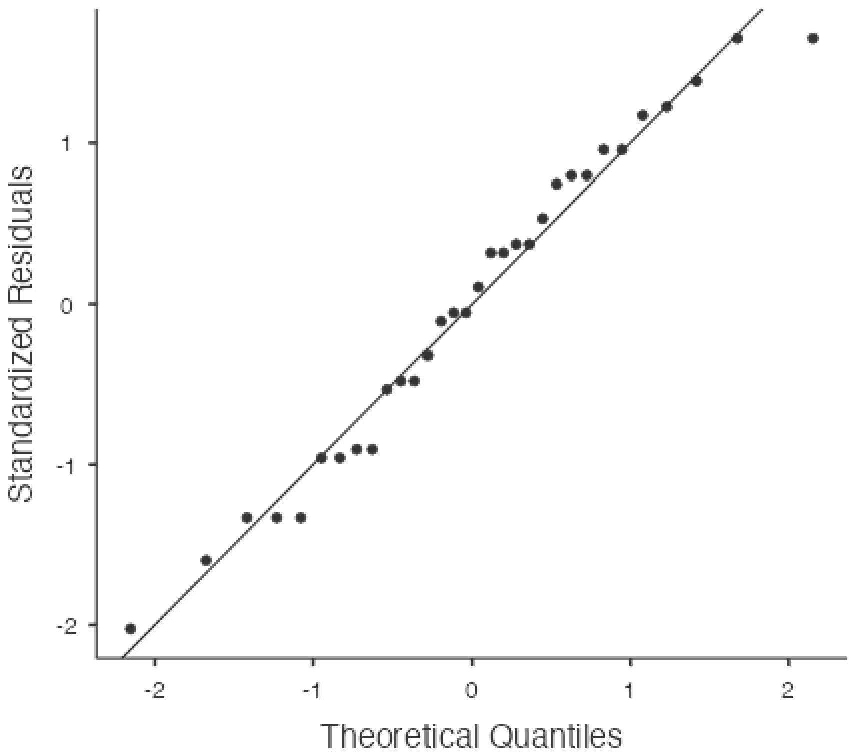
Note. Type 3 Sums of Squares

Assumptions

Tests of Sphericity

	Mauchly's W	p	Greenhouse-Geisser ε	Huynh-Feldt ε
Food	0.136	0.047	0.533	0.666

Q-Q Plot



Post Hoc Tests

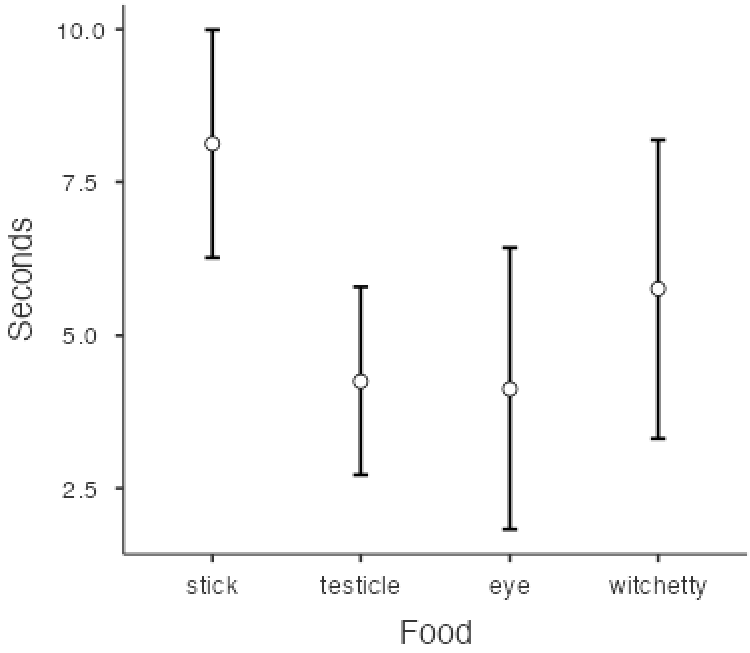
Post Hoc Comparisons - Food

Comparison								
Food		Food	Mean Difference	SE	df	t	p_{tukey}	$p_{bonferroni}$
stick	-	testicle	3.875	0.811	7.00	4.775	0.008	0.012
	-	eye	4.000	0.732	7.00	5.465	0.004	0.006
	-	witchetty	2.375	1.792	7.00	1.325	0.577	1.000
testicle	-	eye	0.125	1.202	7.00	0.104	1.000	1.000
	-	witchetty	-1.500	1.336	7.00	-1.122	0.688	1.000
eye	-	witchetty	-1.625	1.822	7.00	-0.892	0.809	1.000

[4]

Estimated Marginal Means

Food



[4]

References

[1] The jamovi project (2021). *jamovi*. (Version 2.2) [Computer Software]. Retrieved from https://www.jamovi.org.

[2] R Core Team (2021). *R: A Language and environment for statistical computing*. (Version 4.0) [Computer software]. Retrieved from https://cran.r-project.org. (R packages retrieved from MRAN snapshot 2021-04-01).

[3] Singmann, H. (2018). *afex: Analysis of Factorial Experiments*. [R package]. Retrieved from https://cran.r-project.org/package=afex.

[4] Lenth, R. (2020). *emmeans: Estimated Marginal Means, aka Least-Squares Means*. [R package]. Retrieved from https://cran.r-project.org/package=emmeans.