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.

Descriptives

Descriptives

	Cloak
N	24
Missing	0

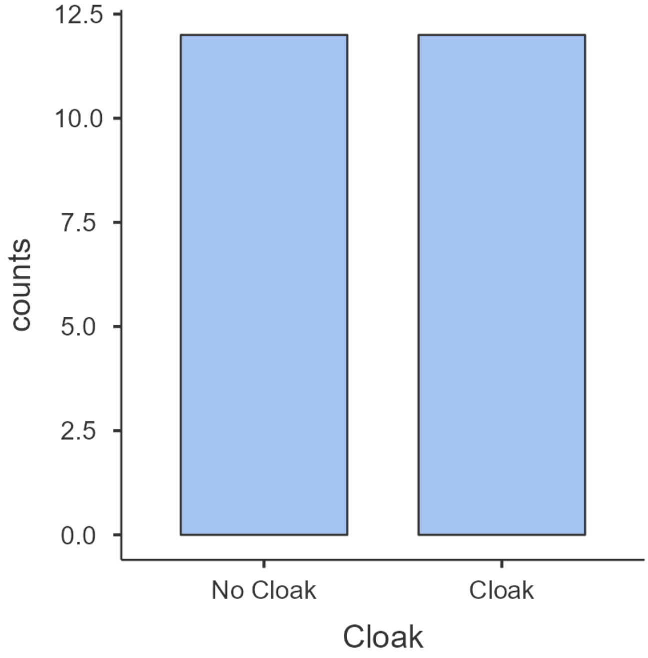
Frequencies

Frequencies of Cloak

Cloak	Counts	% of Total	Cumulative %
No Cloak	12	50.0 %	50.0 %
Cloak	12	50.0 %	100.0 %

Plots

Cloak



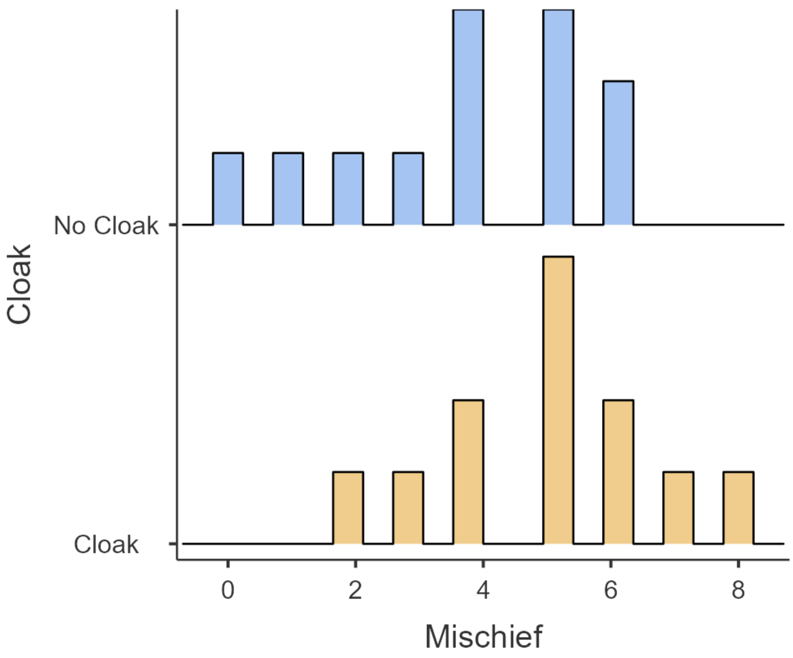
Descriptives

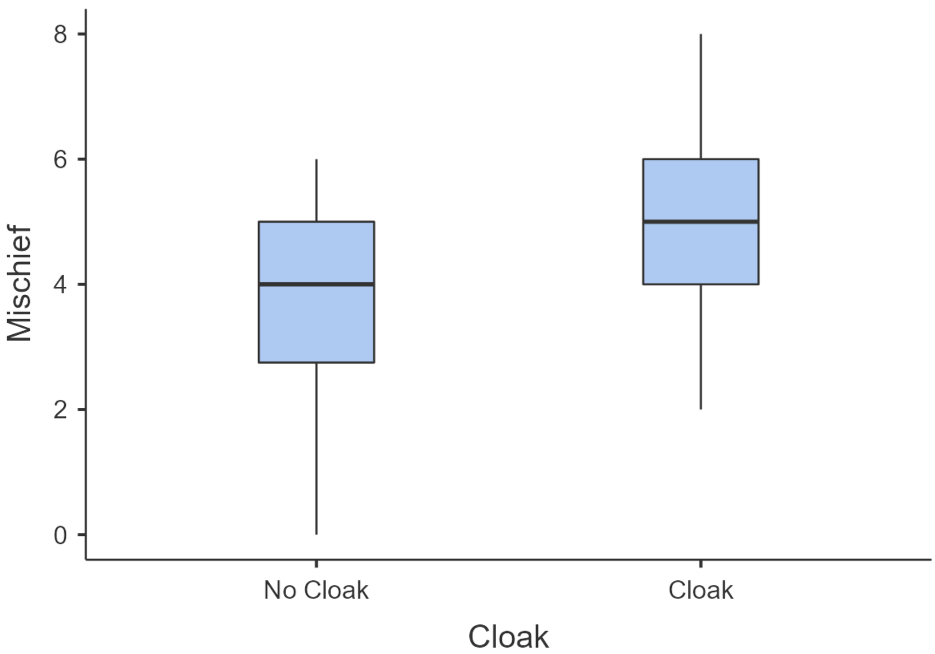
Descriptives

	Cloak	Mischief
N	No Cloak	12
	Cloak	12
Missing	No Cloak	0
	Cloak	0
Mean	No Cloak	3.75
	Cloak	5.00
Median	No Cloak	4.00
	Cloak	5.00
Standard deviation	No Cloak	1.91
	Cloak	1.65
Minimum	No Cloak	0.00
	Cloak	2.00
Maximum	No Cloak	6.00
	Cloak	8.00
Skewness	No Cloak	-0.789
	Cloak	0.00
Std. error skewness	No Cloak	0.637
	Cloak	0.637
Kurtosis	No Cloak	-0.229
	Cloak	0.161
Std. error kurtosis	No Cloak	1.23
	Cloak	1.23
Shapiro-Wilk W	No Cloak	0.913
	Cloak	0.973
Shapiro-Wilk p	No Cloak	0.231
	Cloak	0.936

Plots

Mischief





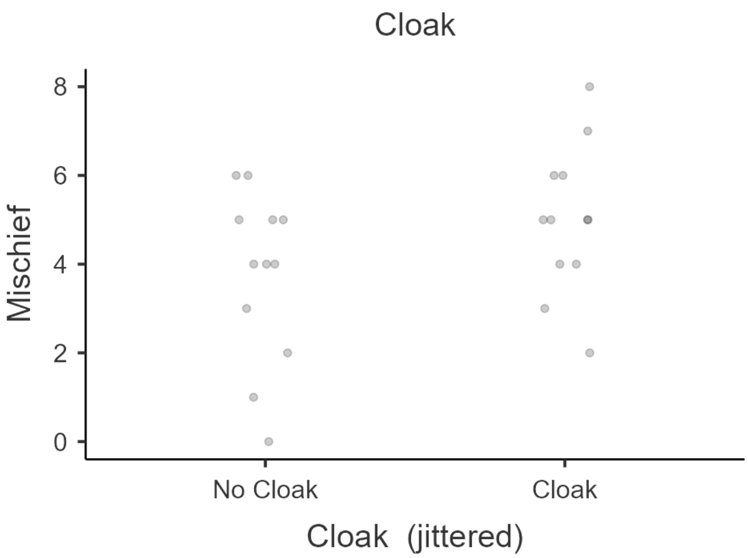
Relationships, Prediction, and Group Comparisons

You have entered a numeric variable for Variable 1 / Dependent Variable and a dichotomous variable for Variable 2 / Independent Variables. Hence, the two sample t test assuming equal population variances or the two sample t test not assuming equal population variances seems to be a good option for you! Both tests are tests for the difference between two population means. In order to run these tests in jamovi, go to: T-Tests > Independent Samples T-Test

- Drop your dependent (numeric) variable in the box below Dependent Variables and your independent (grouping) variable in the box below Grouping Variable
- Under Tests, select Student's if you want to assume equal population variances, and Welch's if you don't want to assume equal population variances
- Under Hypothesis, select your alternative hypothesis

If the normality assumption is violated, you could use the non-parametric Mann-Whitney U test. Click on the links to learn more about these tests!

Scatter Plots of Bivariate Relationships - Dependent/Independent Variables



Independent Samples T-Test

Independent Samples T-Test

		Statistic	df	p	Mean difference	SE difference	95% Confidence Interval Lower	95% Confidence Interval Upper		Effect Size
Mischief	Student's t	-1.71	22.0	0.101	-1.25	0.730	-2.76	0.263	Cohen's d	-0.700
	Welch's t	-1.71	21.5	0.101	-1.25	0.730	-2.76	0.265	Cohen's d	-0.700

Note. H_a $\mu_{\text{No Cloak}} \neq \mu_{\text{Cloak}}$

Assumptions

Normality Test (Shapiro-Wilk)

	W	p
Mischief	0.965	0.546

Note. A low p-value suggests a violation of the assumption of normality

Homogeneity of Variances Test (Levene's)

	F	df	df2	p
Mischief	0.545	1	22	0.468

Note. A low p-value suggests a violation of the assumption of equal variances

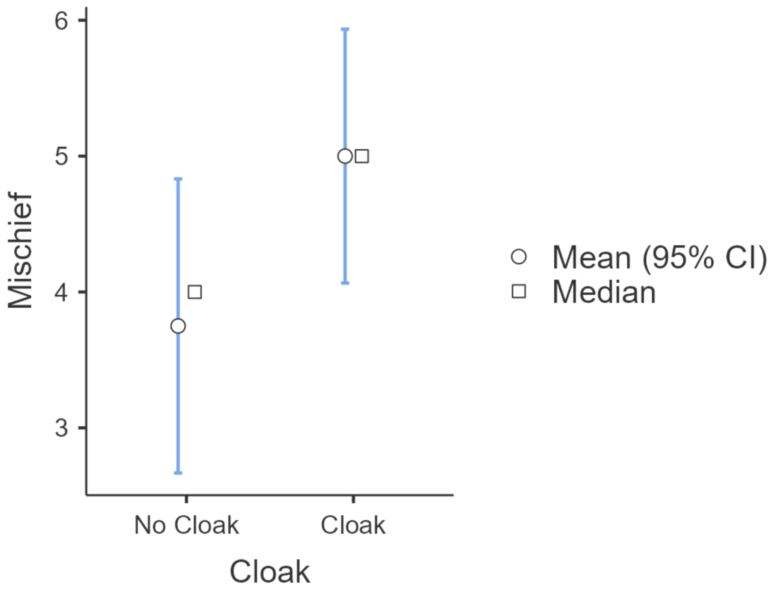
[3]

Group Descriptives

	Group	N	Mean	Median	SD	SE
Mischief	No Cloak	12	3.75	4.00	1.91	0.552
	Cloak	12	5.00	5.00	1.65	0.477

Plots

Mischief



Robust Descriptives

Robust Descriptives

SE

Robust Independent Samples T-Test

Robust Independent Samples T-Test

						95% Confidence Interval		
		t	df	p	Mean diff	Lower	Upper	ξ
Mischief	Yuen's test	1.48	12.3	0.165	-1.00	-2.47	0.472	0.398
	Yuen's bootstrapped	-1.36		0.160				

Bayesian Independent Samples T-Test

Bayesian Mann-Whitney U Test

	BF_{10}	W
Mischief	1.16	47.0

[4] [0] [0]

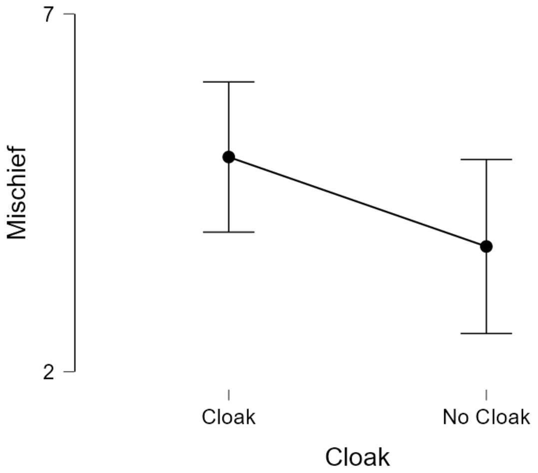
Descriptives

Group Descriptives

						95% Credible Interval	
	Group	N	Mean	SD	SE	Lower	Upper
Mischief	No Cloak	12	3.75	1.91	0.552	2.53	4.97
	Cloak	12	5.00	1.65	0.477	3.95	6.05

Descriptives Plot

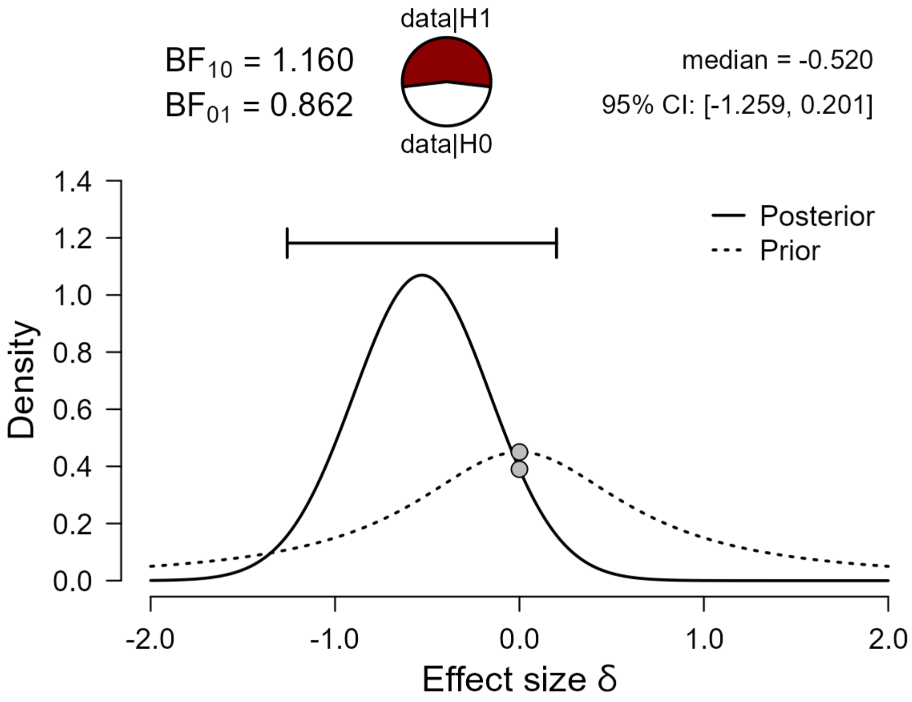
Mischief



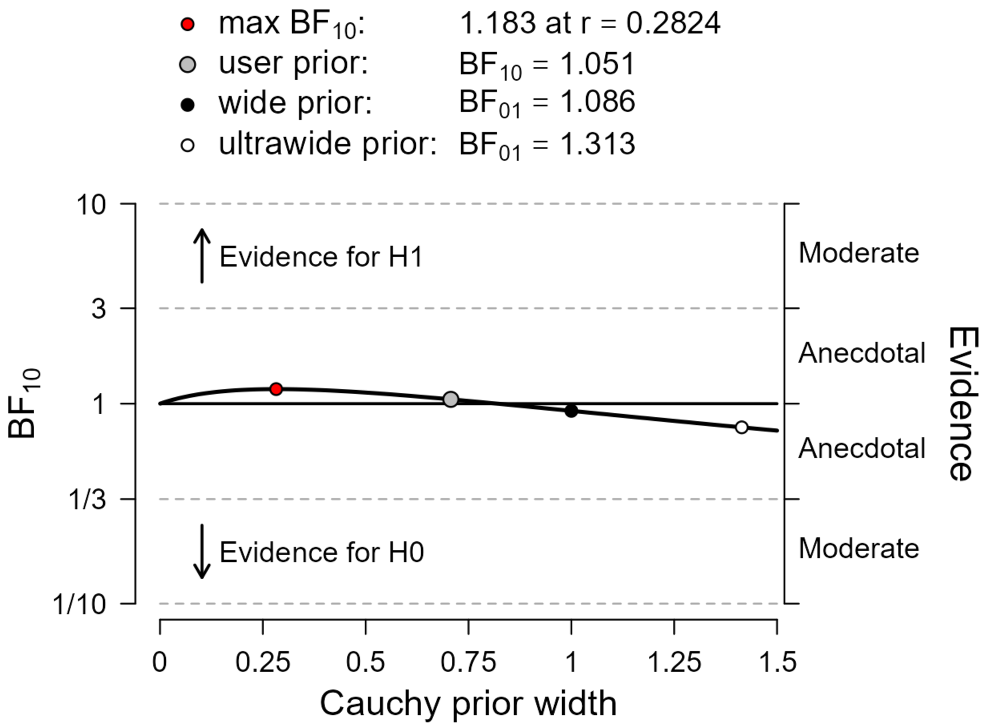
Inferential Plots

Mischief

Prior and Posterior



Bayes Factor Robustness Check



References

[1] The jamovi project (2022). *jamovi*. (Version 2.3) [Computer Software]. Retrieved from https://www.jamovi.org.

[2] R Core Team (2021). *R: A Language and environment for statistical computing*. (Version 4.1) [Computer software]. Retrieved from https://cran.r-project.org. (R packages retrieved from MRAN snapshot 2022-01-01).

[3] Fox, J., & Weisberg, S. (2020). *car: Companion to Applied Regression*. [R package]. Retrieved from https://cran.r-project.org/package=car.

[4] JASP Team (2018). *JASP*. [Computer software]. Retrieved from https://jasp-stats.org.

[5] van Doorn, J., Ly, A., Marsman, M., & Wagenmakers, E. J. (2018). Bayesian Latent-Normal Inference for the Rank Sum Test, the Signed Rank Test, and Spearman's rho. *Manuscript submitted for publication and uploaded to arXiv: https://arxiv.org/abs/1703.01805*.