

Expanding open and transparent meta-analytic data with PsychOpen CAMA:

The implementation of a community-augmented meta-analysis on the Dark Triad of personality

CSPD 2020 | Sharing Psychological Research Data

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Presenter: Lisa Bucher

lisa.bucher@univie.ac.at



Department of Cognition, Emotion, and Methods in Psychology
Faculty of Psychology, University of Vienna

Lisa Bucher, University of Vienna

Ulrich S. Tran, University of Vienna

Gerhard M. Prinz, University of Vienna

Tanja Burgard, ZPID Trier

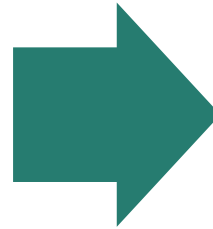
Michael Bosnjak, ZPID Trier and University of Trier

Martin Voracek, University of Vienna

Requirements for meta-analyses

Transparency

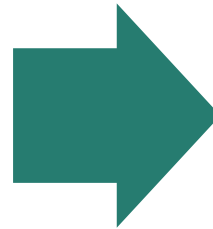
(Lakens et al., 2017; Polanin et al. 2020)



Reproducibility

Currency

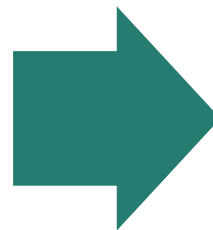
(Bosco et al., 2019; Elliott et al., 2017; Tsuji et al., 2014)



Dynamic / Up-to-date

Re-usability

(Cristia et al., 2020)

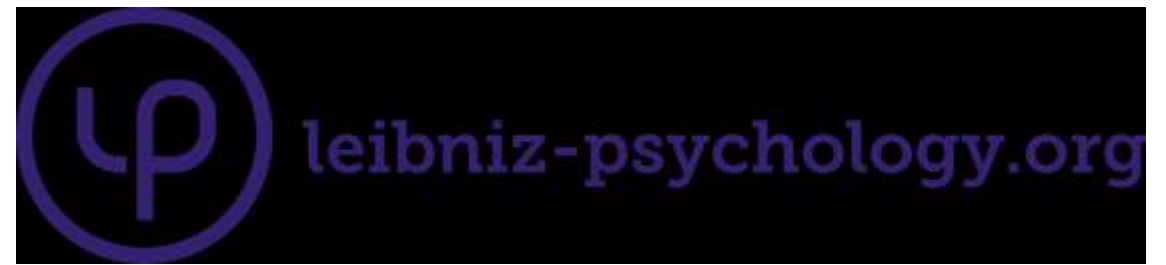


Theory evaluation & study
planning

Community-Augmented Meta-Analysis (CAMA)

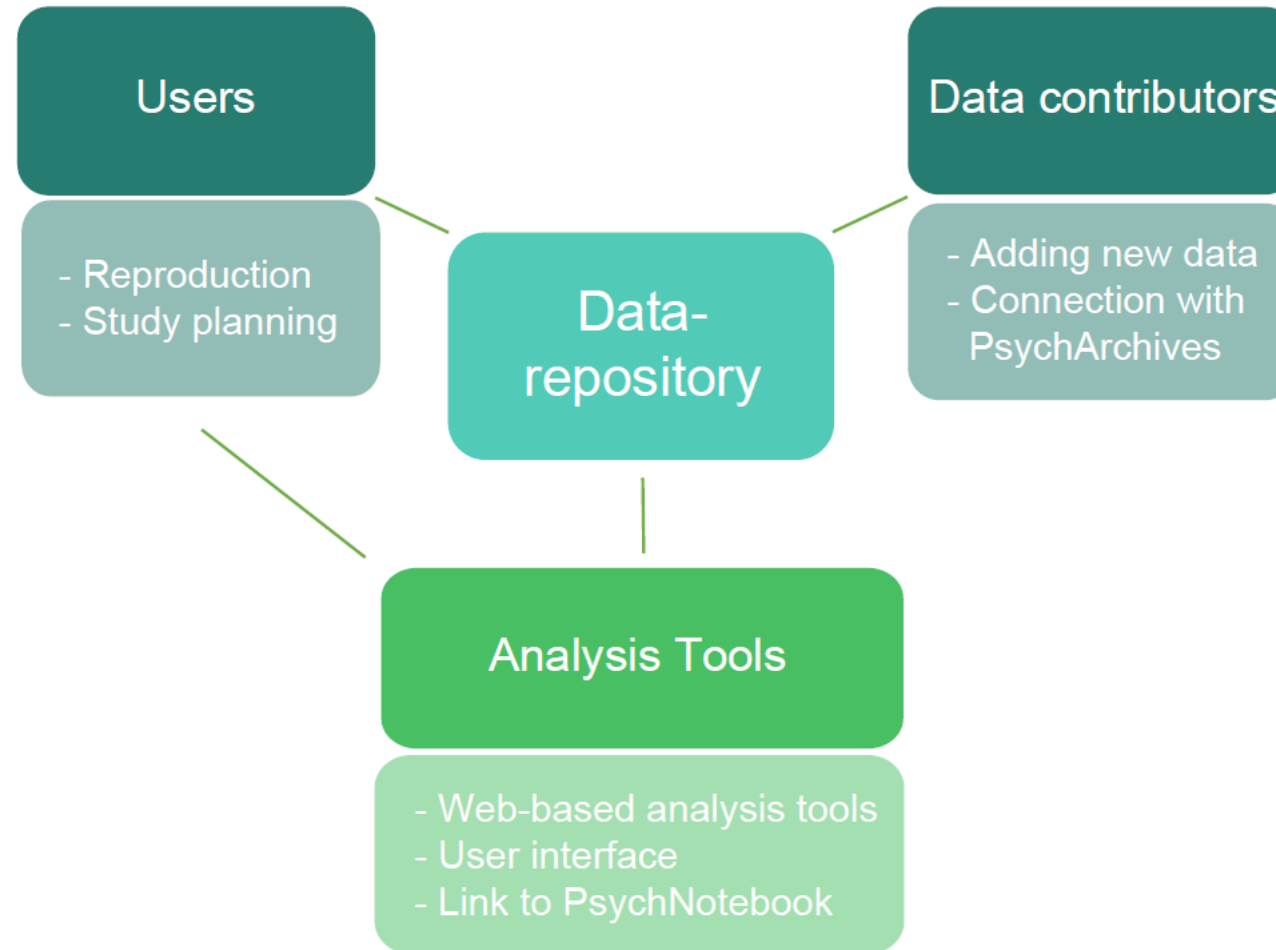
- Web-based meta-analysis
- Open access to all data and results
 - Open data-repository and web-based analysis tools
- Keeping evidence up-to-date (dynamic approach)
 - Continuous study inclusion
- Research community
 - Using up-to-date data and results for study planning
 - Primary researchers as contributors

PsychOpen CAMA



- Leibniz Institute for Psychology (ZPID)
 - 1st release in 2021
- Interactive online platform to realize CAMAs in psychology
 - Open storage for CAMAs
 - Contributions from various research areas

PsychOpen CAMA



Realizing a CAMA with PsychOpen CAMA

growing research interest

Total citations Cited by 3776



Scholar articles [The dark triad of personality: Narcissism, Machiavellianism, and psychopathy](#)
DL Paulhus, KM Williams - Journal of research in personality, 2002
[Cited by 3776](#) [Related articles](#) [All 15 versions](#)

(Retrieved November 22, 2020, <https://scholar.google.at/>)

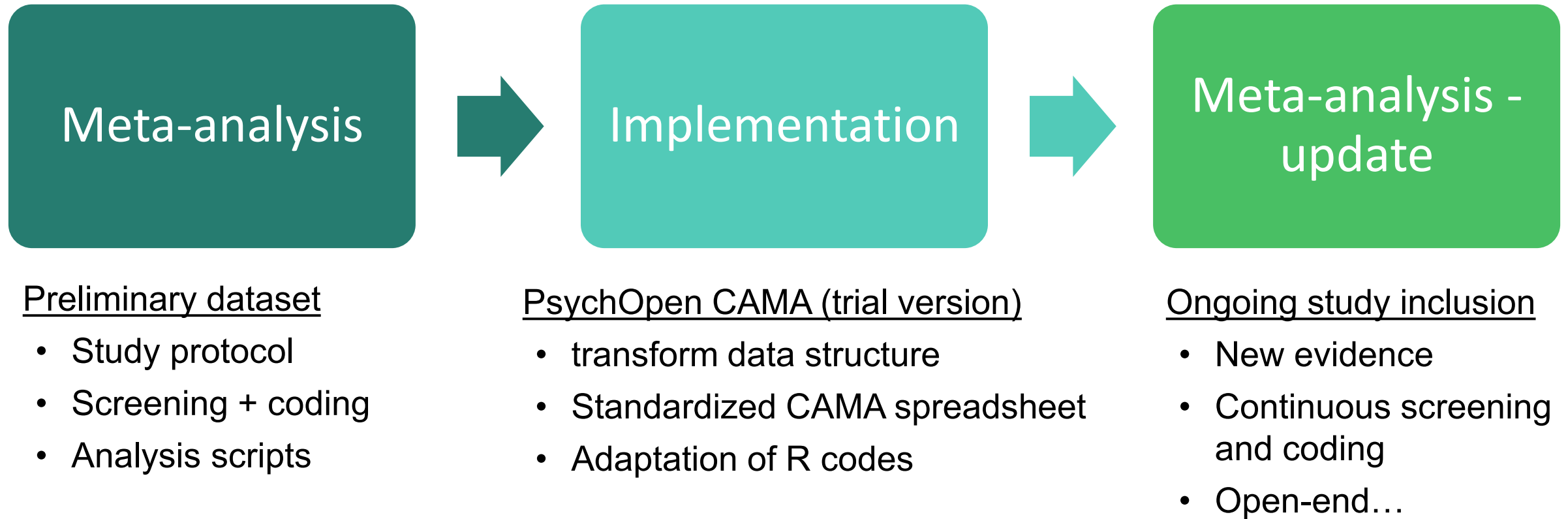
Research Topic: Dark Triad of Personality

- Dataset (reports N=181) → continuously updated
- Meta-analyses of trait interrelations and sex differences in the three Dark Triad traits
 - Machiavellianism, narcissism and psychopathy
 - In sum: 6 meta-analyses



Published Study Protocol in PsychArchives
<http://dx.doi.org/10.23668/psycharchives.2752>

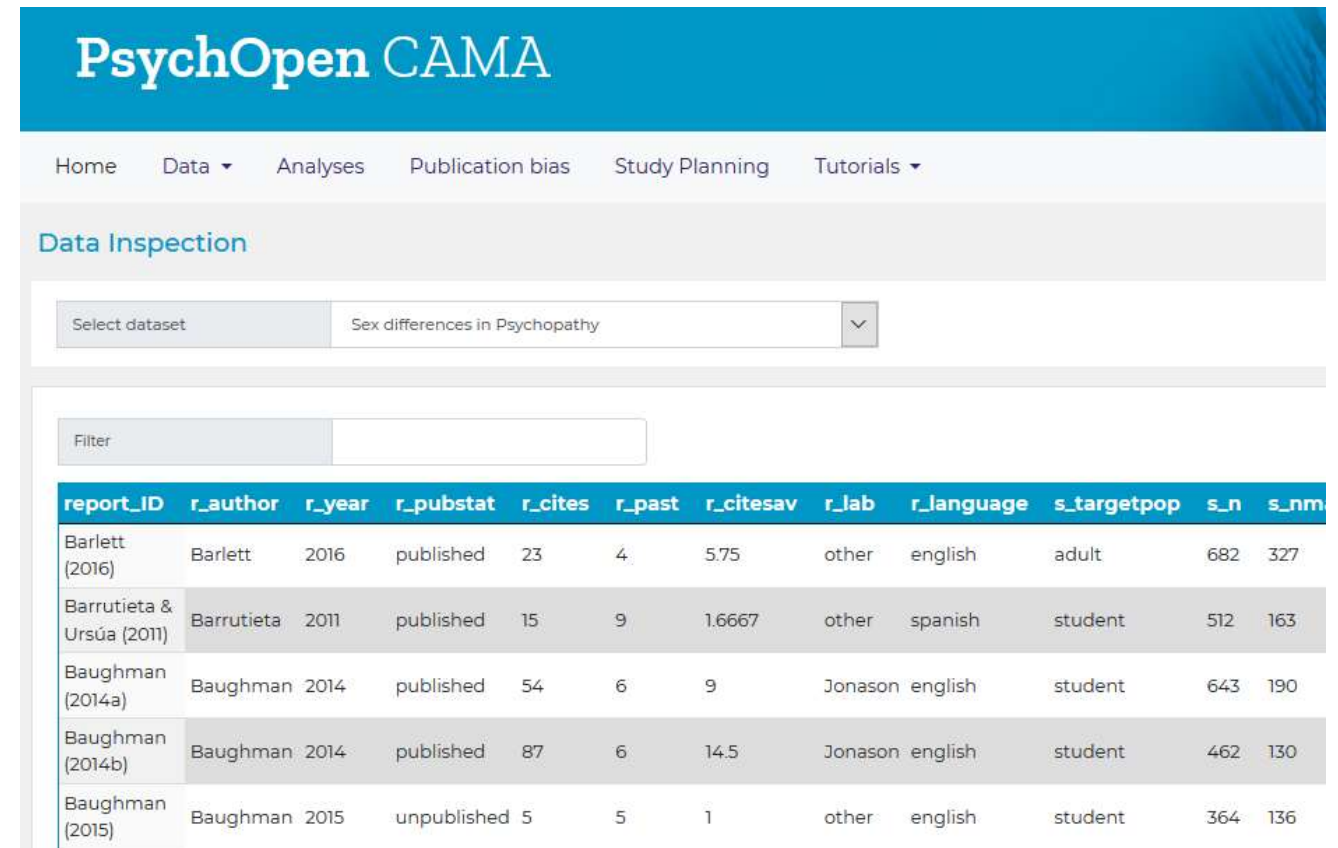
Implementation process



PsychOpen CAMA: Data-inspection

Selecting dataset

- Table with all information within a CAMA
- Filter option



The screenshot shows the PsychOpen CAMA Data Inspection interface. At the top, there is a blue header with the text "PsychOpen CAMA". Below the header is a navigation bar with links: Home, Data (with a dropdown arrow), Analyses, Publication bias, Study Planning, and Tutorials (with a dropdown arrow). The main content area is titled "Data Inspection" in blue. Below this title, there is a "Select dataset" button and a dropdown menu showing "Sex differences in Psychopathy". Below the dropdown menu, there is a "Filter" button and a text input field. Below the filter, there is a table with 12 columns: report_ID, r_author, r_year, r_pubstat, r_cites, r_past, r_citesav, r_lab, r_language, s_targetpop, s_n, and s_nm. The table contains 5 rows of data.

report_ID	r_author	r_year	r_pubstat	r_cites	r_past	r_citesav	r_lab	r_language	s_targetpop	s_n	s_nm
Barlett (2016)	Barlett	2016	published	23	4	5.75	other	english	adult	682	327
Barrutieta & Ursúa (2011)	Barrutieta	2011	published	15	9	1.6667	other	spanish	student	512	163
Baughman (2014a)	Baughman	2014	published	54	6	9	Jonason	english	student	643	190
Baughman (2014b)	Baughman	2014	published	87	6	14.5	Jonason	english	student	462	130
Baughman (2015)	Baughman	2015	unpublished	5	5	1	other	english	student	364	136

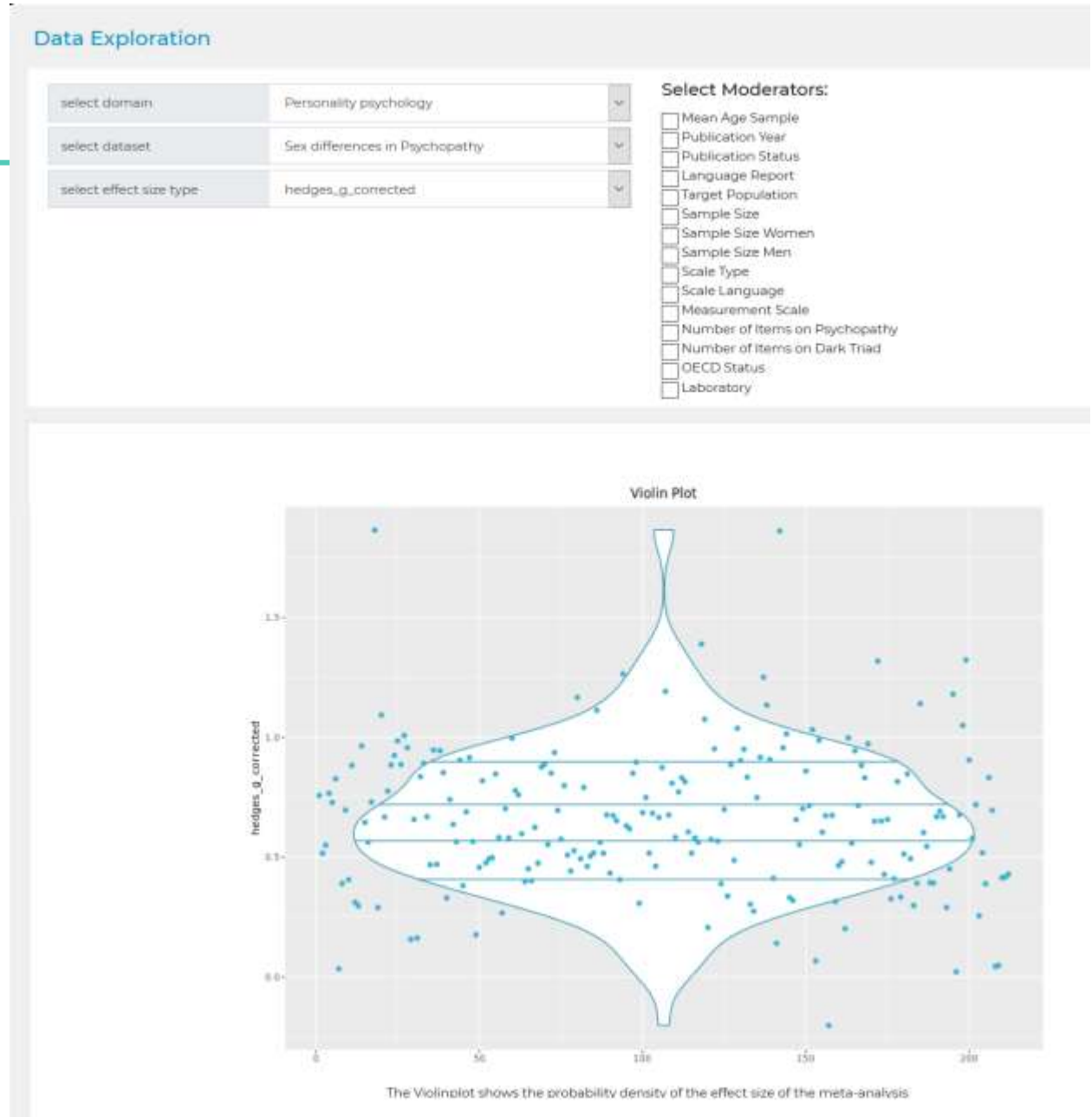
Data exploration

Select data of interest

- Effect size
- Moderators

Effect size distributions

- Violin Plots
- Scatter Plots



Analysis tools

- Model Output
 - R package *metafor* (Viechtbauer, 2010)
- Visualizations
 - Forest Plot
 - Cumulative Forest Plot
- Guide for interpretations

Basic Analyses

select domain: Personality psychology

select dataset: Sex differences in Psychopathy

select effect size type: hedges_g_corrected

Select Moderators:

- ☐ Mean Age Sample
- ☐ Publication Year
- ☐ Publication Status
- ☐ Language Report
- ☐ Target Population
- ☐ Sample Size
- ☐ Sample Size Women
- ☐ Sample Size Men
- ☐ Scale Type
- ☐ Scale Language
- ☐ Measurement Scale
- ☐ Number of Items on Psychopathy
- ☐ Number of Items on Dark Triad
- ☐ OECD Status
- ☐ Laboratory

Update View

RMA Model Forest Plot Cumulative Forest Plot

Random-Effects Model (k = 212; tau^2 estimator: REML)

loglik	deviance	AIC	BIC	AICc
-36.1848	72.3695	76.3695	83.0732	76.4272

tau^2 (estimated amount of total heterogeneity): 0.0559 (SE = 0.0076)
tau (square root of estimated tau^2 value): 0.2364
I^2 (total heterogeneity / total variability): 79.11%
H^2 (total variability / sampling variability): 4.79

Test for Heterogeneity:
Q(df = 211) = 1042.4806, p-val < .0001

Model Results:

estimate	se	zval	pval	ci.lb	ci.ub
0.6437	0.0194	33.1623	<.0001	0.6057	0.6818 ***

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

This output shows the results of the Random Effects Meta-Analysis for k effect sizes. K is the number of studies included in the meta-analysis. The information given is interpreted as follows:

Tau^2
Estimated between-study variance, reflects the amount of heterogeneity among the true effect sizes across studies

Tau
Estimated standard deviation of underlying true effects across studies, can be used to describe the distribution of true effects

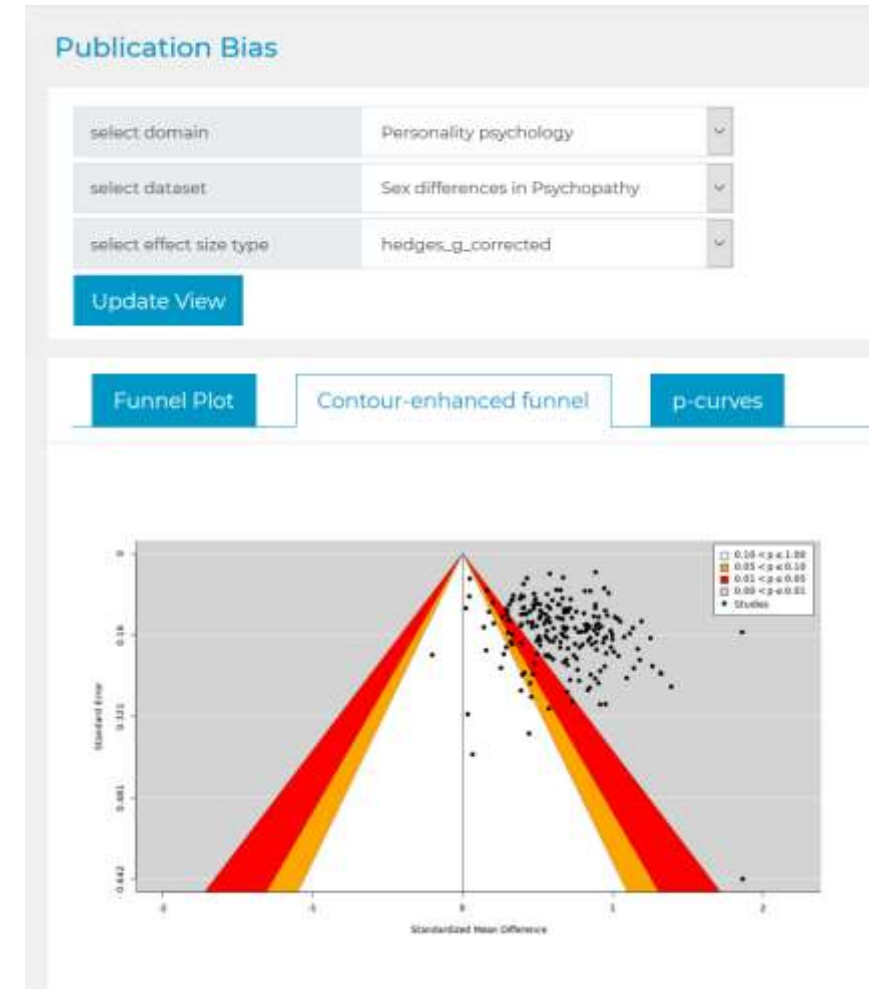
I^2
Variability may occur between studies (true heterogeneity, tau^2) and within studies (sampling error). I^2 is the percentage of the total variability, that is due to true heterogeneity

H^2
Relative excess in Q over its degrees of freedom. The ratio of the Q statistic to its degrees of freedom is interpreted as a measure of the extent of heterogeneity

PsychOpen CAMA: Publication bias

Publication Bias

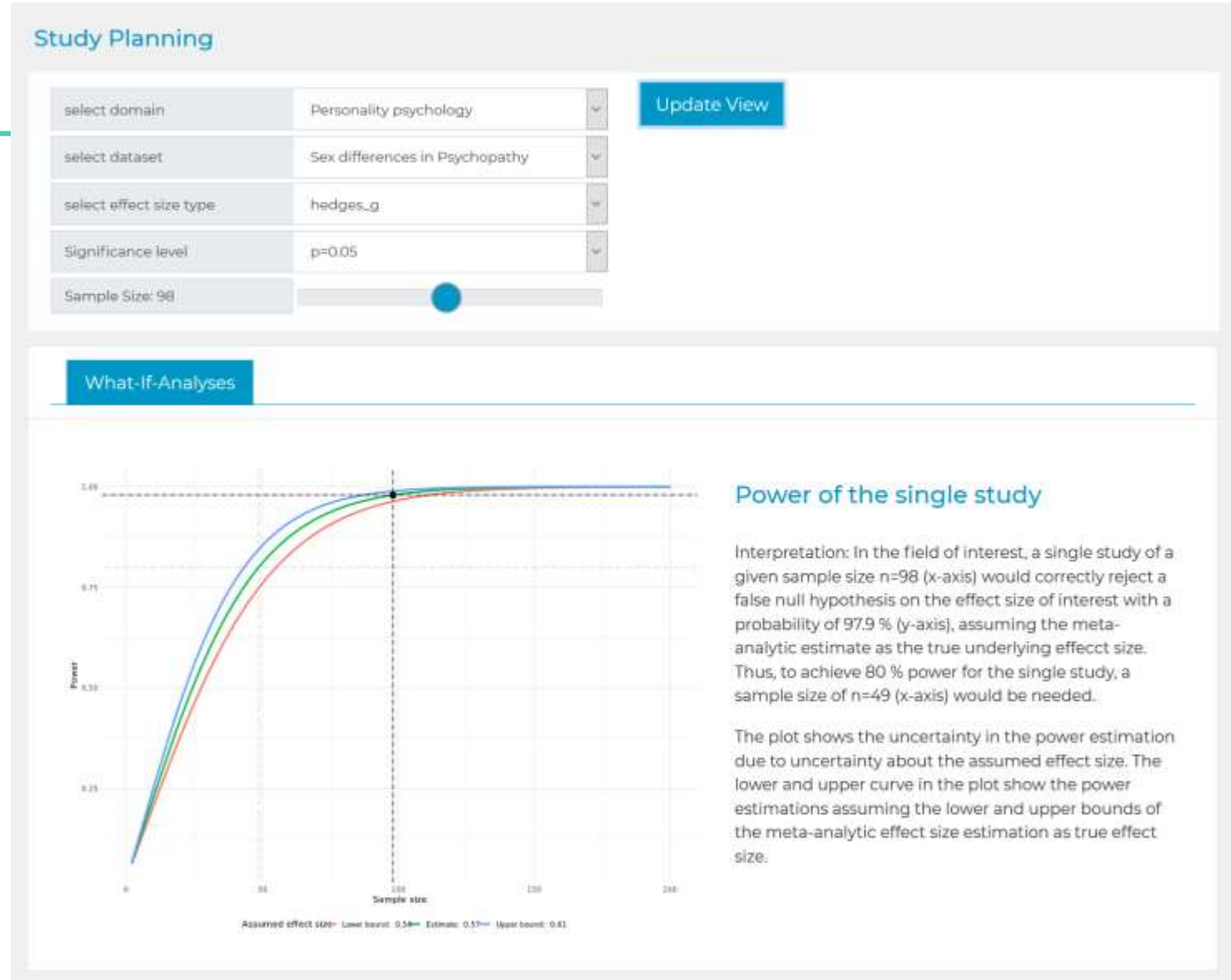
- Contour-enhanced funnel plot (Peters et al., 2008)
- Egger regression test (Egger et al., 1997)
- p-curve (Simonsohn et al., 2014)



Study planning

Power Analysis

- Dataset
- Effect size type
- Significance level
- Sample size



Current status: Benefits & possibilities

Community

- Open access
- Easy-to-use
- Adding own studies
- Status-quo and theory evaluation (Cristia et al., 2020)

Researcher

- Sharing meta-analytic data
- Organizing large-scale meta-analyses
- Consistent analyses
- Continuous & up-to-date evidence

Remaining challenges & prospects

Theoretical considerations and documentation

- Inclusion/exclusion process
- Coding relevant information
- Interpreting results



Maintenance and data curation

- Automatization of processes (Thomas et al., 2017)
- Crowdsourcing – community as contributor (Tsuji et al., 2014)



Human effort required!

Thank you for your attention!

Do you have any questions?

Lisa Bucher



Department of Cognition, Emotion, and Methods in Psychology
Faculty of Psychology, University of Vienna

lisa.bucher@univie.ac.at

References

- Bosco, F. A., Field, J. G., Larsen, K. R., Chang, Y., & Uggerslev, K. L. (2020). Advancing meta-analysis with knowledge-management platforms: Using metaBUS in psychology. *Advances in Methods and Practices in Psychological Science*, 3(1), 124-137. <https://doi.org/10.1177/2515245919882693>
- Burgard, T., Bosnjak, M., & Studtrucker, R. (in press). Community-augmented meta-analyses (CAMAs) in psychology. Potentials and current systems. *Zeitschrift für Psychologie*.
- Cristia, A., Tsuji, S., & Bergmann, C. (2020). Theory evaluation in the age of cumulative science. *OSF Preprints*. <https://doi.org/10.31219/osf.io/83kg2>
- Egger, M., Smith, G. D., Schneider, M., & Minder, C. (1997). Bias in meta-analysis detected by a simple, graphical test. *British Medical Journal*, 315, 629-634. <https://doi.org/10.1136/bmj.315.7109.629>
- Elliott, J. H., Synnot, A., Turner, T., Simmonds, M., Akl, E. A., McDonald, S., ... Pearson, L. (2017). Living systematic review: 1. Introduction – the why, what, when, and how. *Journal of Clinical Epidemiology*, 91, 23-30. <https://doi.org/10.1016/j.jclinepi.2017.08.010>
- Lakens, D., Page-Gould, E., van Assen, M. A. L. M., Spellman, B., Schönbrodt, F. D., Hasselman, F., ... Scheel, A. M. (2017, March 31). Examining the Reproducibility of Meta-Analyses in Psychology: A Preliminary Report. <https://doi.org/10.31222/osf.io/xfbjf>
- Paulhus, D. L., & Williams, K. M. (2002). The Dark Triad of personality: Narcissism, Machiavellianism, and psychopathy. *Journal of Research in Personality*, 36(6), 556–563. [https://doi.org/10.1016/S0092-6566\(02\)00505-6](https://doi.org/10.1016/S0092-6566(02)00505-6)

References

- Peters, J. L., Sutton, A. J., Jones, D. R., Abrams, K. R., & Rushton, L. (2008). Contour-enhanced meta-analysis funnel plots help distinguish publication bias from other causes of asymmetry. *Journal of Clinical Epidemiology*, 61, 991-996. <https://doi.org/10.1016/j.jclinepi.2007.11.010>
- Polanin, J. R., Hennessy, E. A., & Tsuji, S. (2020). Transparency and reproducibility of meta-analyses in psychology: A meta-review. *Perspectives on Psychological Science*, 15(4), 1026-1041. <https://doi.org/10.1177/1745691620906416>
- Simonsohn, U., Nelson, L. D., & Simmons, J. P. (2014). P-curve: a key to the file-drawer. *Journal of experimental psychology: General*, 143(2), 534. <http://doi.org/10.1037/a0033242>
- Thomas, J., Noel-Storr, A., Marshall, I., Wallace, B., McDonald, S., Mavergames, C., ... Pearson, L. (2017). Living systematic reviews: 2. Combining human and machine effort. *Journal of Clinical Epidemiology*, 91, 31-37. <https://doi.org/10.1016/j.jclinepi.2017.08.011>
- Tsuji, S., Bergmann, C. & Cristia, A. (2014). Community-Augmented Meta-Analyses: Toward cumulative data assessment. *Perspectives on Psychological Science*, 9(6), 661-665. <https://doi.org/10.1177/1745691614552498>
- Viechtbauer, W. (2010). Conducting meta-analyses in R with the metafor package. *Journal of Statistical Software*, 36(3), 1-48. <https://doi.org/10.18637/jss.v036.i03>