

Kent State University

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Evaluating the Reproducibility of Computer Searches Used for Systematic Reviews (SR)

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Available at: https://works.bepress.com/paul_fehrmann/5/

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“The search process needs to be documented in enough detail ... to the extent that all the searches of all the databases are reproducible.”
(Searching for studies: A guide to information retrieval for Campbell Systematic Reviews, Campbell Collaboration, 2010)

SR in Psychology

EBSCO's PsycINFO. May 16, 2013
Searched English journal articles,
“methods”=SR

Year	Hits
2000	17
2005	212
2010	995
2013	1,319

The use of SR is growing.

Resources for Evaluating SR

- AMSTAR
- STARLITE
- PRISMA
- PRESS

Computer Search Report Checklist (CSRC)

Timeline, development, use, publication, ongoing work

2007/08

Reviewed major guidelines/recommendations for item content
Non-redundant recommendations translated into 47 items

2008/09

Trained and piloted test items
Assessed checklist item inter-rater reliability

2009/11

Evaluated psychology SR with "comprehensiveness items" (C)
Article published in journal *Research Synthesis Methods*

2012/present

Use "reproducibility" (R) items with sample of psychology SR
Results to be submitted for publication

Ongoing development

Gather input from experts
Target, refine, reduce number of items
Possible weighted scoring for R and C items
Possible web site to support CSRC scoring & reports

Inter-Rater Agreement & Frequencies for select Reproducibility Items

CSRC Item	Kappa*	Frequencies**		
		Campbell	Psych	Fisher's***
1. Copy (any)	.951 (.000)	13/25	1/25	.000
2. Names (every)	.485 (.000)	25/25	24/25	1.000 (ns)
3. Vendor (any)	.896 (.000)	10/25	2/25	.018
5. Date run (any)	.700 (.000)	10/25	3/25	.051
7. All exact terms (any)	.291 (.031)	22/25	24/25	.609 (ns)
9. Control vocab (any)	.854 (.000)	12/25	3/25	.012
19. Final hits (each)	.811 (.000)	3/25	4/25	1.000 (ns)
13. Term combos (every)	.263 (.024)	22/25	18/25	.289 (ns)
28. Two independent IE decisions at level of title/abstract (every)	.660 (.000)	13/25	3/25	.005
34. References identified and used as basis for finding other (citing) articles	.540 (.000)	3/25	1/25	.609 (ns)

25 systematic reviews were randomly selected from PsycARTICLES and 25 were randomly selected from the Campbell Library. Select item results above.

* Cohen's Kappa was used to assess inter-rater agreement for the checklist items. Many item Kappa values were significant at <.001. Kappa values below .40 have been interpreted as showing poor to fair agreement, those between .40 and .60 moderate agreement, those between .60 to .80 substantial agreement, and values above .80 excellent agreement (Portney & Watkins, 1993).

** Frequencies are the number of Campbell and PsycARTICLES SR that scored Y for an item after first collapsing scores to Y or N, and then reaching consensus.

*** Fisher's Exact test was used as a measure of the significance of item score differences between the PsycARTICLES and Campbell Collaboration SR. Non-significant differences are noted "ns".

References

Fehrmann, P. and Thomas, J. (2011). Comprehensive computer searches and reporting in systematic reviews. *Research Synthesis Methods*, 2: 15–32. doi: 10.1002/jrsm.31

Portney, L. G. (1993). *Foundations of clinical research: applications to practice*. Norwalk, Conn: Appleton & Lange.

A Computer Search Report Checklist (CSRC)

- To assess computer search steps reported in SR.
- For comprehensiveness (C)
- For reproducibility (R)

Sample CSRC-R Items

Item 1. Does the report state or show that it is providing a copy of the computer search strategy as a saved/downloaded/copy-pasted "search history" from the actual computer search session ?

a. For any Resource	Yes	Pretty Sure	Not Sure	No	NA
b. For every Resource	Yes	Pretty Sure	Not Sure	No	NA

Item 2. Are names given for the computer search resources used ?

a. For any Resource	Yes	Pretty Sure	Not Sure	No	NA
b. For every Resource	Yes	Pretty Sure	Not Sure	No	NA

Item 7. Does the report state (or show or make obvious) that all of the exact search terms (words or phrases) that were used are actually listed ?

a. For any Resource ...	Yes	Pretty Sure	Not Sure	No	NA
b. For every Resource ..etc.	Yes	Pretty Sure	Not Sure	No	NA

Item 19. Does the report show the total number of hits for each 'final strategy used' ?

a. For any Resource	Yes	Pretty Sure	Not Sure	No	NA
b. For each Resource	Yes	Pretty Sure	Not Sure	No	NA
c. Across all Sources	Yes	Pretty Sure	Not Sure	No	NA

Why reproducible computer searches ?

- Increased confidence in SR results.
- Confident evaluation of SR search methods.
- Systematic extension of SR search methods.

Poster for Campbell Collaboration Annual Colloquium, Chicago, Illinois, May 21-23, 2013

Current CSRC information: libguides.library.kent.edu/CSRC

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