BETTER ABSTRACT SCREENING: THEORY AND PRACTICE

Joshua R. Polanin, Ph.D. | Principal Researcher |American Institutes for Research

Terri D. Pigott, Ph.D. | Associate Provost for Research | Loyola University Chicago

Dorothy L. Espelage, Ph.D. | Professor | University of Florida

Jennifer Grotpeter, Ph.D. | Senior Researcher | Development Services Group, Inc.

OVERVIEW

- In the 2018 issues 3 – 5 of *Psychological Bulletin,* review authors reported that an average of 2598 citations were found in the database search
  - With the growth of empirical literature – those numbers will continue to rise

- A team is needed to conduct a large-scale evidence review
  - Yet our guidelines for abstract screening were constructed when reviews had many fewer citations

- Therefore an updated set of best practice guideline are required…

- **Overview of the presentation**
  - Provide context for the process and project
  - Review Best Practice Guidelines

CONTEXT – LARGE-SCALE REVIEW

Abstracts Screened
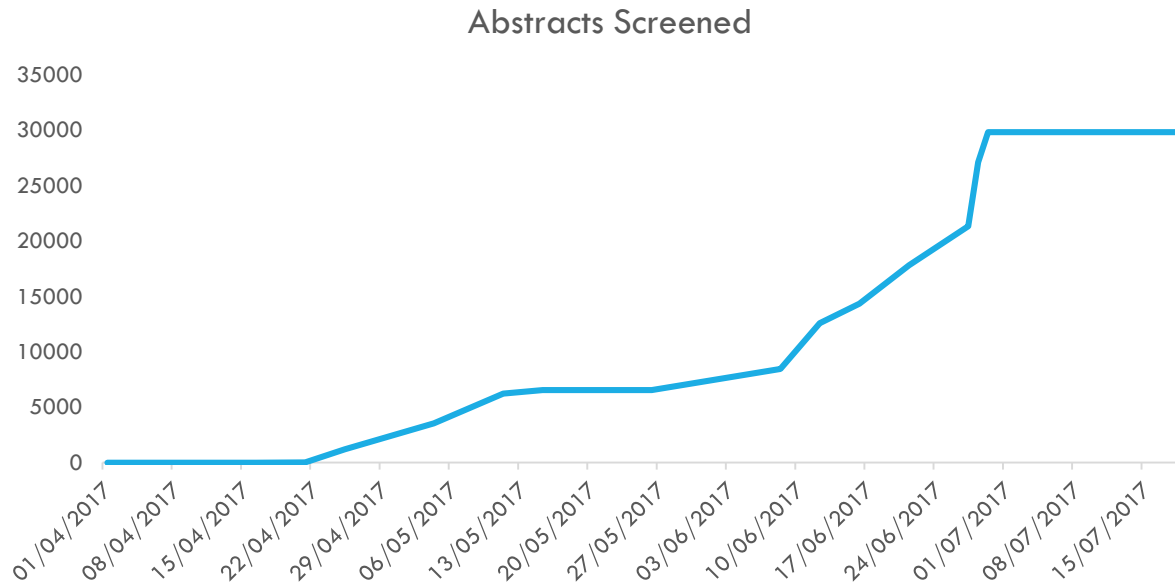
- Nineteen team members screened at least 100 abstracts.

- The average person screened 1,589 abstracts (SD = 1,531) with a median of 1,001 abstracts screened.

- On an average day, 335 abstracts were screened.

BEST PRACTICE GUIDELINES FOR ABSTRACT SCREENING

	Stage	Guideline
1	Beginning	Create an abstract screening tool with questions that are clear and concise. It should include items that: a) are objective, b) are "single-barreled", c) use the same sentence structure, and d) include yes/no/unsure answers only.
2	Beginning	Ensure that the abstract screening tool is organized hierarchically, with the easiest questions at the beginning of the tool.
3	Beginning	Conduct introductory abstract screening trainings where screeners learn and pilot test the tool by screening the same 20-30 abstracts.
4	During	Meet with the abstract screening team on a weekly or bi-weekly basis.
5	During	Minimize changes to the screening tool.
6	During	Use a text-mining abstract screening application.
7	During	Require independent double-screening of each abstract.
8	During	Reconcile disagreements throughout the abstract screening process.
9	During	Encourage screening through intellectual buy-in and incentives.
10	End	Analyze the process and decisions after screening has been completed.

BEGINNING STAGE

	Stage	Guideline
1	Beginning	Create an abstract screening tool with questions that are clear and concise. It should include items that: a) are objective, b) are "single-barreled", c) use the same sentence structure, and d) include yes/no/unsure answers only.

- The abstract screening tool guides screeners in their decisions about whether a citation is eligible for the review, and thus plays an important role in identifying a representative sample of studies for the review.

BEGINNING STAGE

	Stage	Guideline
2	Beginning	Ensure that the abstract screening tool is organized hierarchically, with the easiest questions at the beginning of the tool.

- Abstract screeners naturally attempt to speed through the process and make decisions about each abstract as quickly as possible. Their speed often corresponds to their fatigue: less fatigue, all else being equal, means quicker and more reliable abstract screening.

- The easiest questions are ones that can be answered without interpretation, investigation, or assumptions.
  - "Is the date of publication on or after 1995?" or "Is the abstract written in English or French?".

BEGINNING STAGE

	Stage	Guideline
3	Beginning	Conduct introductory abstract screening trainings where screeners learn and pilot test the tool by screening the same 20-30 abstracts.

- After a thorough discussion of the screening tool, the screeners should independently screen a number of abstracts using the screening tool
  - Cochrane suggests 10-12
  - We suggest 20-30, especially for large-scale reviews

- Analyze the disagreements after the pilot
  - disagreements may point to poorly written questions
  - disagreement may provide valuable teaching opportunities.

DURING STAGE

	Stage	Guideline
4	During	Meet with the abstract screening team on a weekly or bi-weekly basis.

- The purpose of these meetings is to instill a culture of discussion, exploration, and curiosity while decreasing "coder drift."

- Ask screeners to write one specific question about a difficult abstract during the week and email it to the review manager.
  - The review managers can then choose which questions need discussing with the group.

DURING STAGE

	Stage	Guideline
5	During	Minimize changes to the screening tool.

- Changing the screening tool in a substantive way naturally creates differences within the already screened studies.

- Changes to the tool can incite confusion, which in turn creates unreliable screening.

- Should changes become the norm instead of the exception, screeners may start to misunderstand what types of abstracts should be in or out.

DURING STAGE

	Stage	Guideline
6	During	Use a text-mining abstract screening application.

- A text-mining abstract screening application analyzes each abstract screening decision made by the screeners, evaluates each additional abstract yet to be screened, posits the probability that each remaining abstract is eligible for the review, and then sorts the remaining abstracts by that probability of inclusion.

- The result is an ordered list of abstracts, where the abstracts with the highest probability are at the beginning of the list, and the abstracts with the lowest probability of being included are at the end of the list.

- As a result, abstract screeners may move efficiently through the list of abstracts to screen as they move forward through the list because those studies most likely to meet the inclusion criteria are at the beginning of the task.

DURING STAGE

	Stage	Guideline
7	During	Require independent double-screening of each abstract.

- Double-screening all available abstracts is not a new practice and has been suggested as a best practice for decades (e.g., Rosenthal, 1991).

- Single-screening has the potential to remove studies from consideration before they can be vetted fully. It is simply too easy to make a mistake and remove a study.

DURING STAGE

	Stage	Guideline
8	During	Reconcile disagreements throughout the abstract screening process.

- No matter how effective the screening tool is, or how often the abstract screening team meets, screening disagreements will occur.

- We suggest reconciliation occur after only 20-30% of the abstracts have been screened. More frequent reconciliation limits the need to re-screen abstracts due to potential errors. Afterwards, reconciliation should continue after screeners complete each additional 20-30%.

- We recognize that reconciling throughout the abstract screening process will render traditional reliability statistics insensible.
  - We do not believe these tools provide helpful information, especially in light of this approach.

DURING STAGE

	Stage	Guideline
9	During	Encourage screening through intellectual buy-in and incentives.

- We have found it particularly effective to encourage screeners to consider ways to use the database for tangential projects.

- Use financial incentives (if available), to reward screeners who:
  - (a) screen the most abstracts,
  - (b) have the high agreement rate, or
  - (c) log the most screening time.

END STAGE

	Stage	Guideline
10	End	Analyze the process and decisions after screening has been completed.

- Conducting a post-mortem of the abstract screening process is akin to debriefing a research participant or analyzing exit poll results.

- The purpose is to understand what worked, what didn't work, and how the process could be improved in the future

SUMMARY

	Stage	Guideline
1	Beginning	Create an abstract screening tool with questions that are clear and concise. It should include items that: a) are objective, b) are "single-barreled", c) use the same sentence structure, and d) include yes/no/unsure answers only.
2	Beginning	Ensure that the abstract screening tool is organized hierarchically, with the easiest questions at the beginning of the tool.
3	Beginning	Conduct introductory abstract screening trainings where screeners learn and pilot test the tool by screening the same 20-30 abstracts.
4	During	Meet with the abstract screening team on a weekly or bi-weekly basis.
5	During	Minimize changes to the screening tool.
6	During	Use a text-mining abstract screening application.
7	During	Require independent double-screening of each abstract.
8	During	Reconcile disagreements throughout the abstract screening process.
9	During	Encourage screening through intellectual buy-in and incentives.
10	End	Analyze the process and decisions after screening has been completed.

THANK YOU!

Joshua R. Polanin, Ph.D. | jpolanin@air.org

Terri D. Pigott, Ph.D. | tpigott@luc.edu

Dorothy L. Espealge, Ph.D. | espelage@uf.edu

Jennifer Grotpeter, Ph.D. | jgrotpeter@dsgonline.com