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**An Empirical Estimation of Publication Bias in Research on K-12 Math Interventions**

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**Objectives/aims**

In K-12 education research, the possible impact of excluding grey literature from meta-analysis has often been addressed by calculating a “fail-safe N” (Orwin, 1983). In medical research, publication bias is often estimated by a meta-analysis of meta-analyses, computing a ratio that compares odds ratios from published literature to those from grey literature found in those meta-analyses.

This study uses a different approach. By applying the meta-regression technique on the K-12 Math interventions effect sizes (ESs) listed in the What Works Clearinghouse (WWC) database, this study estimates publication bias directly by including and excluding ESs of different publication sources.

**Methods**

Established by the US Government in 2002, WWC assigns dedicated resources to search and to screen evaluation studies on K-12 education from the United States and around the world.

Using the study citation in WWC’s publicly available summary dataset, this study coded the source of 362 K-12 Math ESs into dummy variables (journals, books, government reports, etc) and used them as regressors in the meta-regression. The coefficient of the variable “Journal”, for example, is the difference in average ESs between journal articles and other sources.

We used a random effects model and applied the RVE technique (Hedges et al., 2010, 2012) in the regression to adjust for the clustering of ESs within studies.

**Main findings**

Preliminary results show that an average ES from journal articles is larger than ESs not from journals, +0.123, p =0.041.

The difference is smaller (+0.112, p=0.054) when ESs from studies published in journals and books were combined and compared to the grey literature: reports from the government, private organizations, or unpublished works. The difference is even smaller if journals, books and a source of grey literature, for example, government reports were combined (+0.042, p=0.287).

Thus, in the area of K-12 Math, although there is no evidence of systematic bias if a source of grey literature is excluded, meta-analyses that include journal articles only overestimates the impact of interventions.