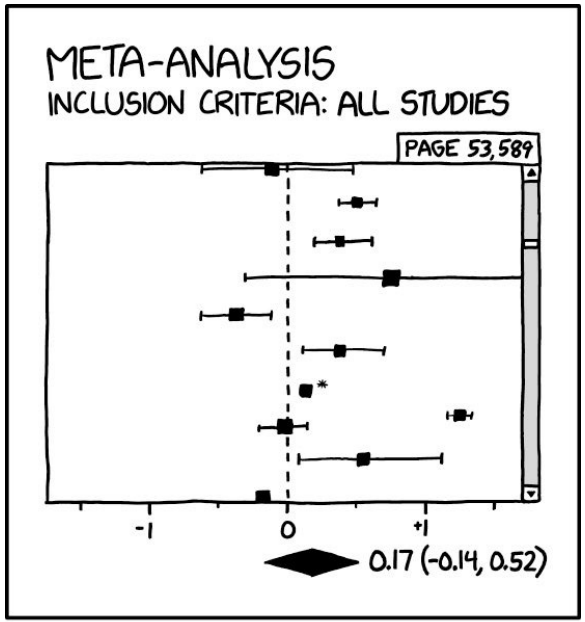
Publication Bias

- Publication bias exists when the **probability** of a study getting **published** is affected by its **results** (Rothstein, Sutton, and Borenstein 2005, chap. 2, 5).
- There is strong evidence that a study is more likely to find its way into the public if its findings are statistically significant or confirm the initial hypothesis (Schmucker et al. 2014; Scherer et al. 2018; Chan et al. 2014; Dechartres et al. 2018).



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Publication Bias

- Publication bias is just one of many **non-reporting biases** (Page et al. 2020):
  - **Citation bias:** Even when published, studies with negative or inconclusive findings are less likely to be cited.
  - **Time-lag bias:** Studies with positive results are often published earlier than those with unfavorable findings.
  - **Multiple publication bias:** Results of “successful” studies are more likely to be reported in several journal articles.
  - **Language bias:** In most disciplines, the primary language in which evidence is published is English. Publications in other languages are less likely to be detected.
  - **Outcome reporting bias:** e.g., only significant/positive results are published, “outcome switching”

Publication Bias

- Non-reporting biases can be seen as systemic factors which make it harder for us to find existing evidence.
- However, even if we were able to **include all relevant findings**, our results may still be **flawed**.
- Bias may also exist due to **questionable research practices (QRPs)** that researchers have applied when analyzing and reporting their findings (Simonsohn, Simmons, and Nelson 2020).
  - Examples: P-hacking, fishing for significance, hypothesizing after the results are known (HARKing)

→ We can differentiate between **biases "between studies"** (non-reporting biases) and **"within studies"** (e.g. P-hacking).

→ Statistically, the two biases manifest quite differently

Addressing Non-Reporting Biases and QRPs

- The best method is to **minimize** the number of **studies that are missing in the first place**, e.g.:
  - Include dissertations, non-English literature
  - Search study registries
  - Ask governmental bodies for unpublished evidence

- Many **statistical methods** are available that, under the right circumstances, adjust for the impact of publication bias. But:
  - These methods are based on **different assumptions** concerning ***why*** evidence is missing/distorted
  - These assumptions are typically **not testable**, only more or less **plausible**