



What is open science?

It's a movement to make [research transparent](#) and accessible to all. The consumers of research should have access to the evidence behind all scholarly claims (no secrets).

Transparent reporting is necessary for
both reproducibility or replicability



What is Reproducibility?

"the ability of a researcher to duplicate the results of a prior study using the same materials and procedures as were used by the original investigator" (Bollen, et al, 2015)

What is Replicability?

"the ability of a researcher to duplicate the results of a prior study if the same procedures are followed but new data are collected" (Bollen, et al, 2015)

What are questionable research practices (QRPs)?

Dorthothy Bishop (2019) & other scholars have identified four questionable research practices assumed to have caused the reproducibility crisis:

1. [p-hacking](#)

data dredge; data fishing; misuse of data to look for patterns that may not be significant

2. [HARKing](#)

Hypothesizing after results are known; a post hoc hypothesis informed by research findings; passing the hypothesis off as if it was a priori (Kerr, 1998)

3. Underpowered Studies

Low statistical power which could lead to false positives and unreliable results

4. Bias against the null

No relationship between findings so the researcher doesn't share findings, or a journal editor could refuse to publish null or negative findings.



Some scholars think that preregistration is a way to prevent questionable research practices (QRPs).

What is preregistration?

When a scholar preregisters a study, they are specifying & sharing a research plan before gathering data. This action is considered a way to differentiate between hypothesis-testing & hypothesis-generating. Another way to think about this is that preregistration is making a distinction between confirmatory research & exploratory research.

References

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Kerr, N. L. (1998). HARKing: Hypothesizing after the results are known. *Personality and Social Psychology Review*, 2(3), 196-217. doi:[10.1207/s15327957pspr0203_4](https://doi.org/10.1207/s15327957pspr0203_4)