

Advancing Open Science with AI

AI tool for preregistration-study comparison

Background

Preregistration is a key open science practice designed to enhance research transparency and reproducibility and avoid p-hacking and HARKing. Despite its promise, studies often contain undisclosed deviations from preregistered plans (Manago, 2023; van den Akker et al., 2024).

Moreover, reviewers and editors lack time to assess pre-registration-study consistency, and many authors require support in developing skills for preregistration and reproducibility.

Dimensions of Consistency Analysis

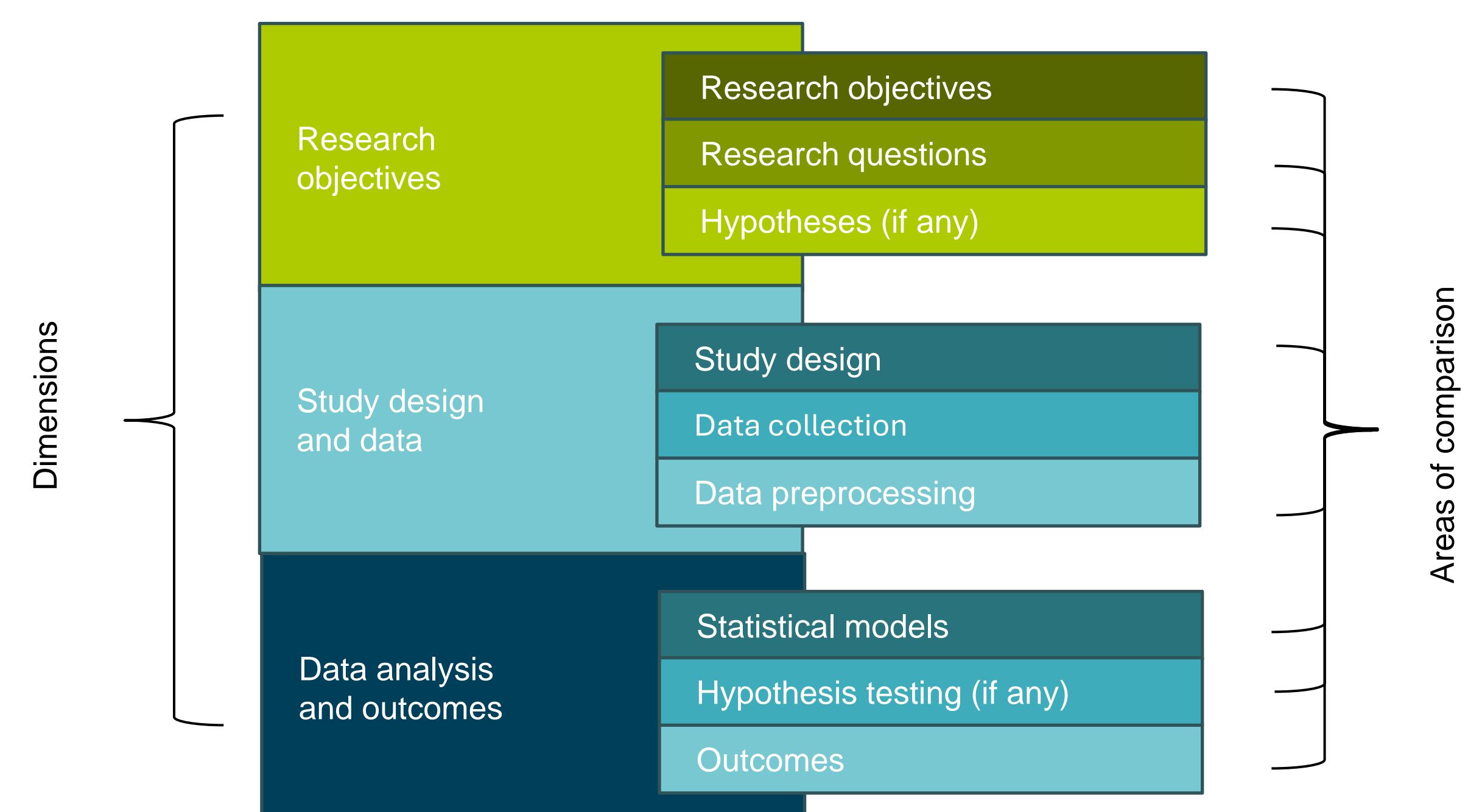


Figure 1. Dimension for Consistency Analysis

The Solution

The developed tool compares research preregistration with the final manuscript, identifying discrepancies to ensure alignment with the initial research plan. This tool offers an efficient method for assessing transparency and preventing selective reporting.

The initial version is built with a low-code AI-platform, leveraging Large Language Models for advanced analysis, and providing a user-friendly interface similar to ChatGPT. The tool has potential for integration in peer-review systems or as a resource in teaching methodology and promoting open science practices.

Human-AI Collaboration approach

The solution integrates human-AI collaboration, where AI flags discrepancies and users can refine results via a chat interface, ensuring accuracy and context. This enhances peer-review and fosters author engagement with research transparency and reproducibility.

References

- Manago, B. (2023). Preregistration and Registered Reports in Sociology: Strengths, Weaknesses, and Other Considerations. *Am Soc* 54, 193–210. <https://doi.org/10.1007/s12108-023-09563-6>
- Van den Akker, O. R. Et al. (2024 - forthcoming). The potential of preregistration in psychology: Assessing preregistration producibility and preregistration-study consistency. *Psychological Methods*.

**For the demo: Scan QR or visit bit.ly/reprorepo.
Suggestions for collaboration are welcome!**



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