

# Preregistration in Psychology: Empirical Evidence of its Effectiveness

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## Background

### Main Research Questions (RQs):

1. Are preregistrations in psychology producible?
2. Are published studies consistent with their preregistrations?
3. Does preregistration lead to less positive results in the literature?

Producibility is the extent to which a study can be *produced* based on the information available in the preregistration

The proportion of positive results in a field can be seen as an indicator of questionable research practices (QRPs)

Only if preregistrations are *producible and consistent* can preregistrations be effective in preventing questionable research practices (QRPs)

## Method RQ1 & RQ2

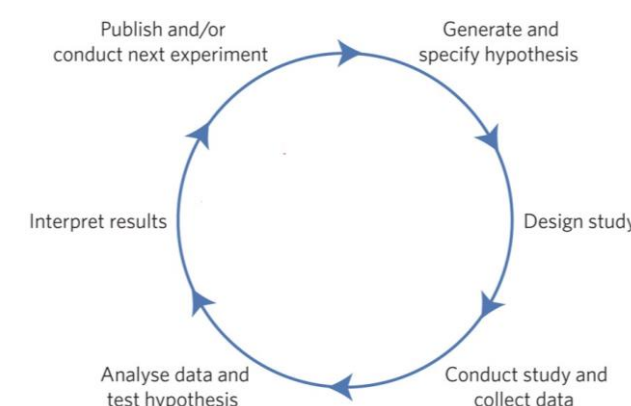
1. Through the Preregistration Challenge and Preregistration Badges we identified 300 preregistered studies



2. Using a tailor-made protocol we coded whether preregistrations were producible and in line with the associated published studies.

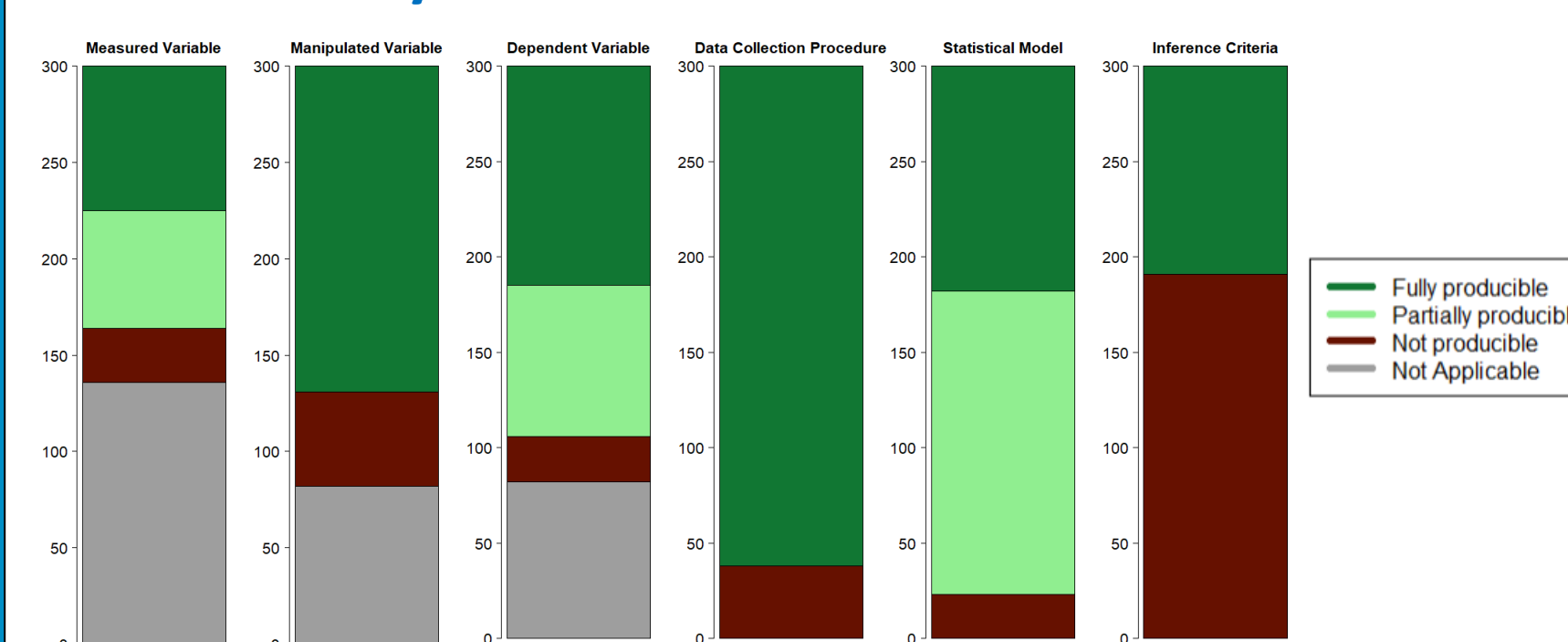


3. We related the main questions in the protocol directly to the empirical cycle but we also had questions about control variables, missing data, statistical assumptions, and exclusion criteria

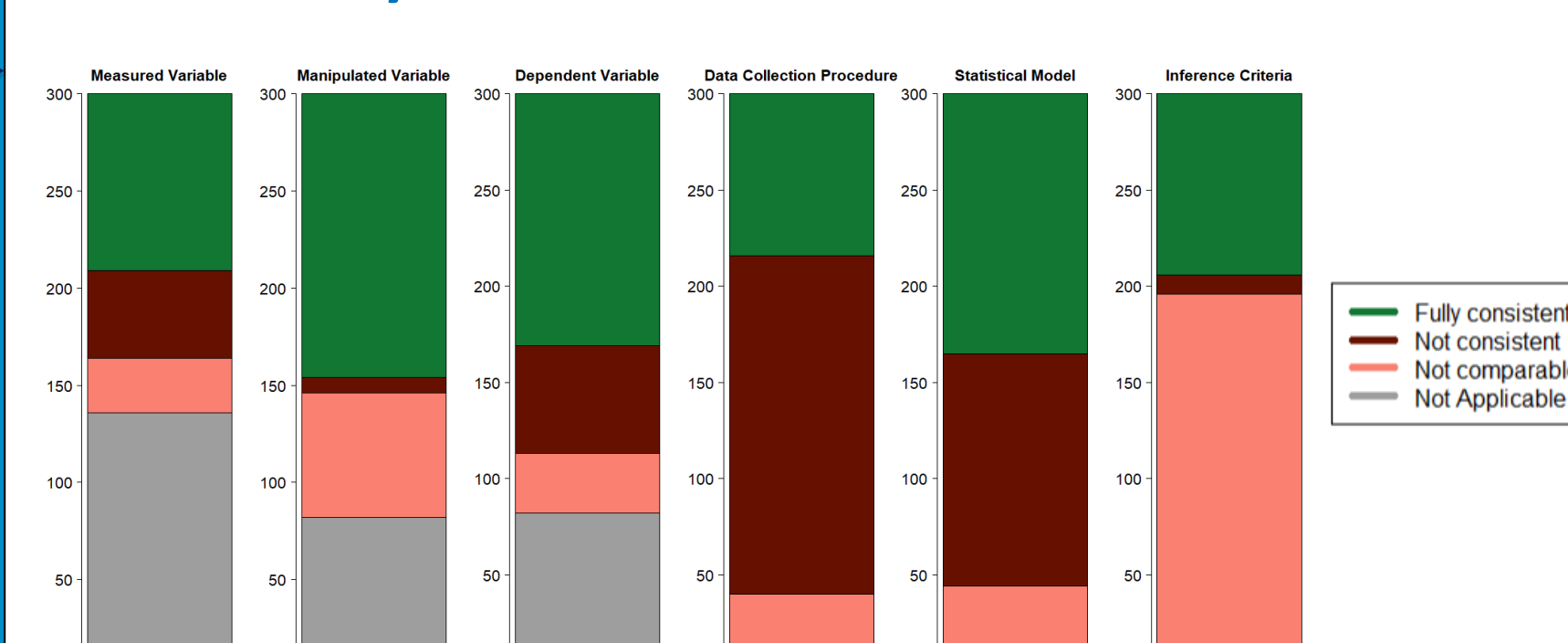


## Results RQ1

### Producibility:



### Consistency:



### Other findings:

- More comprehensive preregistration templates yielded more producible preregistrations.
- Preregistrations did not improve over time
- Authors rarely discussed preregistration deviations

## Discussion

### Conclusions:

1. Researchers need to describe their studies better in both preregistrations and papers
2. Researchers should state and explain deviations from their preregistration more
3. The evidence whether preregistration is effective at preventing QRPs is not clear-cut

### Recommendations:

1. University theses should be accompanied by a course on best preregistration practices
2. Journals should invest in the technical specifications to improve the efficiency of preregistration-paper comparisons
3. Preregistration templates should be comprehensive and include an item prompting a power analysis
4. We should stimulate the uptake of registered reports



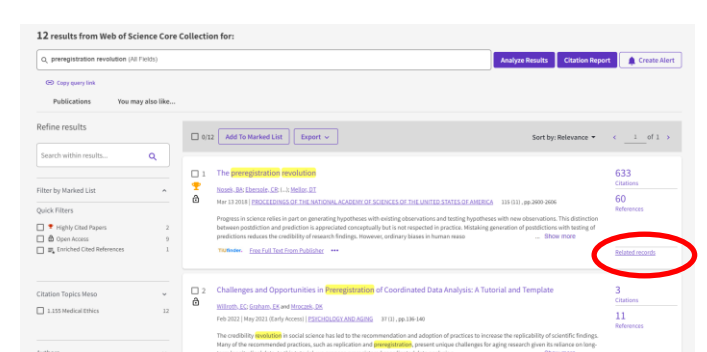
## Method RQ3

1. From the sample used for RQ1 and RQ2 we selected 193 preregistrations for which we could find a preregistered test in the associated paper

2. We counted the proportion of positive results per preregistered study and calculated the average



3. We selected a control group of non-preregistered studies by using Web of Science 'Related records'



4. We extracted the results from the non-preregistered studies and calculated the proportion of positive results

## Results RQ3

### Proportions of positive results:



### Other findings:

- We did not find that preregistered studies had lower effect sizes, and less statistical errors
- We did find that preregistered studies more often contained, had higher sample sizes, and scored
- Better on a range of impact measures

