# Working with pre-registrations in the context of already existing data

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• Move in recent years (triggered by "replication crisis") toward more transparent practices around research design.

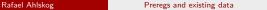
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- A methodological ideal: pre-registered studies.
- Decide on crucial design choices and plan analyses before data is gathered.
- Increases confidence in results because design choices were made when still "blind" to the data.

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- This poses challenges in the context of preregistering analyses:
  - 1 You have to deal with the limitations that exist can't design your ideal study.
  - 2 Lowers credibility of "data blindness" in theory, you could have seen (parts of) the data already.

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- Makes violations of "data blindness" invariably artificially "deflate your alpha"



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- Someone else may have published results with data is auto-correlated with your data

# Example: Pick variable definitions from prior research!

$$\begin{array}{c|ccccc} & X_1 & X_2 & X_3 \\ \hline Y_1 & 0.1 & 0.3 & 0.2 \\ Y_2 & 0.2 & 0.3 & 0.4 \\ Y_3 & 0.1 & 0.2 & 0.5 \\ \end{array}$$

Table: Fictional correlation table

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• If data partially overlaps, or has autocorrelation over time, merely knowing this can lead to a milder form of "p-hacking"

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- Can be a difficult balance to strike.

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- Build on data that you have been unable to see beforehand (because you didn't previously have access)
- Build on data that could not have been seen beforehand

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  - Solution: plan (long) ahead better spend an extra month or two on planning future studies, than spending additional years and 100Ks of SEK ordering multiple batches of data and compromising blinding

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- There are more subtle ways than outright fraud that can distort the scientific record awareness of these is a great first step.
- Pre-registering analyses even with existing data poses unique challenges, and still relies on trust, but is arguably better than the prior status quo.
- Transparency is key!