Cross Validation

COMM 4940

The Internet

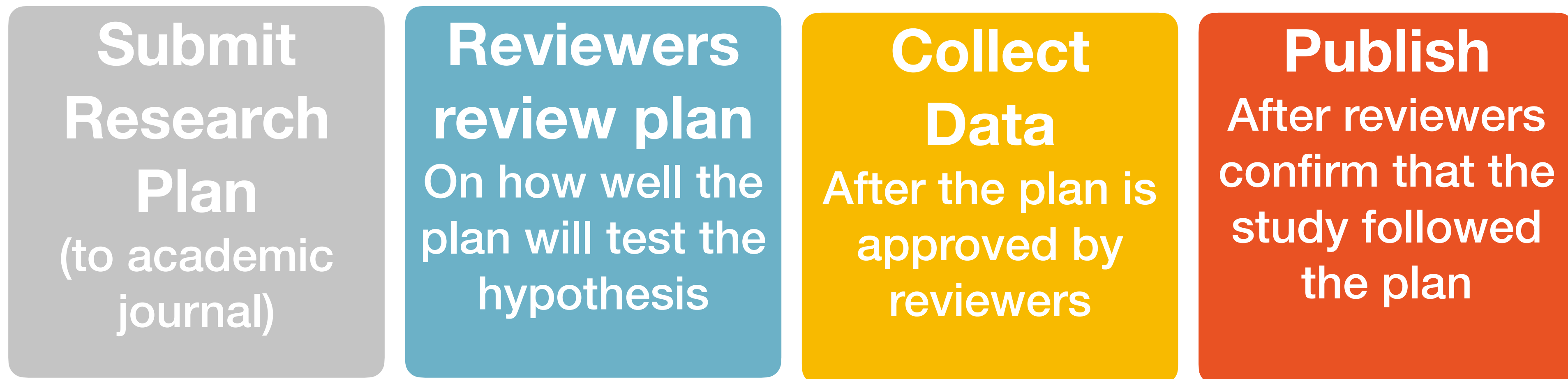**J. Nathan Matias**

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Cornell CALS

Registered Reports

Publishers review the study design / analysis plan before data collection and approve publication on the basis of the study design
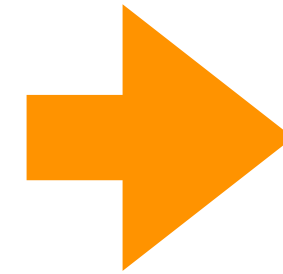
| Submit Research Plan (to academic journal) | Reviewers review plan On how well the plan will test the hypothesis | Collect Data After the plan is approved by reviewers | Publish After reviewers confirm that the study followed the plan |

For more about registered reports, see https://cos.io/rr/

Limitations of confirmatory research

Without at least some initial observation and theory-making, confirmatory research is inefficient.

Exploratory

Iteration
Improvement
Adjustment

Confirmatory

One chance to get things right

Cross Validation

Processes & statistical techniques for supporting exploratory research to support confirmatory research

Holdout	K-fold Cross Validation	Leave-one-subject out	Leave-one-trial-out

Koul, A., Becchio, C., & Cavallo, A. (2018). Cross-validation approaches for replicability in psychology. Frontiers in Psychology, 9, 1117.

Holdout

Developing an exploratory analysis from a partial dataset, then after finalizing the model, testing the model with use of a confirmatory "holdout" dataset.

Note: the holdout statistical technique is different from the practice of having exploratory/confirmatory datasets. You can use any of the cross-validation methods with a pair of exploratory/confirmatory datasets.

Koul, A., Becchio, C., & Cavallo, A. (2018). Cross-validation approaches for replicability in psychology. Frontiers in Psychology, 9, 1117.

Upworthy Final Projects

Final projects in this class will work like registered reports. You grades will be based on your analysis plan, not the confirmatory results.

| Submit Final Analysis Plan | Finals are Graded on the Quality of the Plan | Analyze Confirmatory Data
The professor will do this | Share Results
The professor will share back confirmatory results |

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