

**Title:**

Successful process evaluation provides insight into team development and goal attainment:  
Science of Team Science

**Abstract:**

The Science of Team Science (SciTS) emerged as a field of study because scientists are increasingly charged with solving complex and large-scale societal, health, and environmental challenges. The SciTS field seeks to develop both methods for assessing teams and a knowledge base of effective practices in team science. What makes interdisciplinary scientific teams successful? Many early studies of team science success drew on existing data like bibliometrics and patent applications to examine the patterns of successful teams. However, these metrics have several shortcomings: they can only be used to characterize teams that were successful enough to produce publications, patents or grant proposals; and their creation lags years behind team formation. Studies which rely exclusively on existing data are not able explain the differences between successful and unsuccessful teams in their formation, interaction, and development. This study asks the questions: “How are team processes and interactions related to goal accomplishment in transdisciplinary teams? Can process metrics be used to predict team success and team outcomes?” This study aims to fill the gap in SciTS literature by longitudinally observing eight scientific transdisciplinary teams and correlating process metrics to outcome metrics. From 2015 through 2017, we used participant observation, informal interviews, turn-taking assessments, and social network surveys to follow teams through their first two years of formation. We then examined which metrics of team interaction and team processes are correlated with traditional team-defined outcome metrics such as conference presentations, grant proposals, journal articles, and invention disclosures. We found that the strength of relationships, role of women, and even participation were the biggest predictors of team success. We discuss how process evaluation can be used to assess team success in the early stages of team development and which measures are more strongly associated with team success.

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**Format of data files**

.csv

**Location where data were collected**

Colorado State University

**Time period during which data were collected**

2015-04-01 to 2017-12-31

**File Information:**

Turn Taking Data:

Turn-taking.csv

Social Network Data:

Team1.csv

Team2.csv

Team3.csv

Team4.csv

Team5.csv

Team6.csv

Team7.csv

Team8.csv

Outcome Metrics:

Outcome\_Metrics.csv

Details for each dataset can be found in separate README files:

README\_turn\_taking.pdf

README\_Social\_Network\_Data.pdf

README\_Outcome\_Metrics.pdf

Codebook.csv contains variable definitions and values for the social network data.

**Date dataset was last modified:** 12/9/2018

**Are there multiple versions of the dataset?** No