

## **ABSTRACT**

### **WHEN DO RESEARCHERS COLLABORATE? TOWARD A MODEL OF COLLABORATION PROPENSITY IN SCIENCE AND ENGINEERING RESEARCH**

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Geographically distributed and multidisciplinary collaborations have proven invaluable in answering a range of important scientific questions, such as understanding and controlling disease threats like SARS and AIDS or exploring the nature of matter in particle physics. Despite this, however, collaboration can often be problematic. There are institutional obstacles, collaboration tools may be poorly designed, and group coordination is difficult. To better design technologies to support research activities, we need an improved understanding of why scientists collaborate and how their collaborations work. To achieve this improved understanding, this study compares two theoretical approaches to collaboration propensity—that is, the extent to which collaboration is perceived as useful by individual researchers.

On one hand, cultural comparisons of disciplines suggest that collaboration propensity will be higher in disciplinary cultures that have a more collectivist orientation, as indicated by low levels of competition for individual recognition and few concerns about secrecy related to commercialization and intellectual property. In contrast, an approach based on social and organizational psychology suggests that collaboration propensity will vary as a function of resource concentration, fieldwide

focus on a well-defined set of problems, and the need for and availability of help when difficult problems are encountered in day-to-day work. To explore this question, a mail survey of 900 academic researchers in three fields was conducted, along with 100 interviews with practicing researchers at 17 sites in the field.

Results support a social and organizational psychological interpretation of collaboration propensity. That is, cultural factors such as competition for individual recognition and concerns about intellectual property were not perceived as significant impediments to collaboration. Instead, characteristics like resource concentration and frequent help-seeking behavior were more important in determining collaboration propensity. Implications of these findings include a call for more careful examination of the day-to-day work of scientists and engineers, and a suggestion that concerns about scientific competition impeding collaboration may be unwarranted.