

## DAGSI Research Topic

1. **Research Title:** Team Communication and Language Processing
2. **Individual Sponsor:**

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3. **Academic Area/Field and Education Level**

Cognitive Psychology/Cognitive Science/Linguistics (MS or PhD)

4. **Objectives:** The goal of the Cognition and Modeling Branch (RHWE) is to research and develop high fidelity models of cognitive processes to provide assessments of team and mission effectiveness. The objective of this specific research topic is to identify, model, and predict both what characteristics make for effective communication within teams and also potential sources of language processing difficulty and miscommunications within teams.
5. **Description:** In complex task environments, effective team communication is vital but often not guaranteed, particularly with distributed teams. Factors that lead to degraded communication transfer will hinder effective communication, but so too will cognitive factors, such as distraction, fatigue, or cognitive load. Being able to identify and predict the characteristics that lead to successful communication (or conversely hinder successful communication), and the consequences this has on team common ground maintenance and decision-making, is crucial to our operational objectives. This project seeks proposals that will investigate and develop means of modeling team communications, both to provide assessment on the effectiveness of communications and to develop predictive models of language processing and its effect on decision-making. Of particular interest are proposals that leverage cognitively plausible modeling techniques (e.g., Leabra, ACT-R), language processing tools such as large language models (LLMs), or hybrid approaches to modeling human language processing and measuring communication characteristics in support of enhancing team effectiveness. Desirable proposals should include discussion of experimental designs for human team data collection and data analysis. The branch offers access to additional unclassified data sets that may be leveraged for the purpose of developing models and will contribute modeling and language processing expertise.
6. **Research Classification/Restrictions:** Unclassified, but may involve Controlled Unclassified Information
7. **Eligible Research Institutions:** Universities local to WPAFB preferred