Optimizing Collective Intelligence: The Impact of Cultural Orientations on Team Performance

MACS 30200 Final Proposal Presentation

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1 Research Question

2 Literature Context

3 Design & Method

4 Proof of Concept

5 Feasibility

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Research Question

- How does cultural orientation (individualism vs. collectivism) affect collective intelligence in team-based problem-solving tasks?

- Can mixed-cultural teams outperform culturally homogeneous ones?

Research Question
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Literature Context
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Design & Method
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Proof of Concept
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Feasibility
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Key Literature Insights

- **Baldwin et al. (2023)**
- **Engel et al. (2015)**
- **Basabe & Ros (2005), Khatri (2009)**
- **Saad et al. (2015)**

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Project Design Overview

- Participants: U.S. (individualist) vs. China (collectivist) student teams.
- Task: Solve the Traveling Salesman Problem (TSP) collaboratively.
- Group types: Individualist, Collectivist, Mixed.
- Screening via IndividualismCollectivism Scale (Triandis & Gelfand, 1998).

Methods and Metrics

- **Communication Analysis**: NLP for message clarity, quantity.
- **Collaboration Structure**: Social Network Analysis.
- **Performance Metrics**: CI score $=$ accuracy $+$ time $+$ coordination.
- **Statistical Tools**: ANOVA, regression.
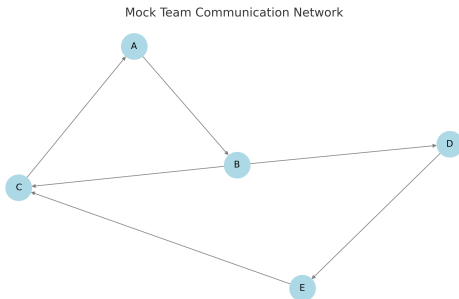
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Proof of Concept
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Mocked Expectations I: Communication Network

- Collectivist teams: more centralized and structured communication.
- Individualist teams: more spontaneous and parallel exchanges.
- Mixed teams: likely hybrid, potential for conflict or synergy.

Mock Team Communication Network

Mocked Expectations II: Information and CI

- Information flow: collectivist teams show steadier progression.
- Individualist teams spike in creativity but dip in coordination.
- Mixed teams may balance both strengths and limitations.
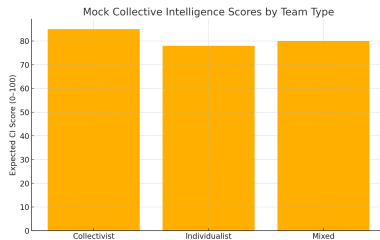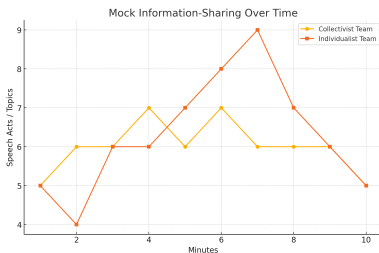
Mock Information-Sharing Over Time

Mock Collective Intelligence Scores by Team Type

Timeline, Cost, and Support

- **Timeline**: 3 mo. recruitment, 2 mo. experiments, 2 mo. analysis, 2 mo. writing.
- **Funding Needed**: \$1,000\$2,000 for participant compensation + software.
- **Advising & Oversight**: Dr. Henry Dambanemuya.

GitHub Repository

- Full proposal, LaTeX sources, and literature review available at:
- https://github.com/yifand1023/macs_30200

Thank You!

Questions? Feedback?
Lets build smarter teams together.