

OmniObserve:

An online meeting facilitator unveiling hidden consensus

#AIMediatedCommunication #HiddenConsensus

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Motivation

- Group brainstorming is widely used in classroom and workplace – but often **underperforms** due to hidden group dynamics.
- Research shows that participants often **withhold doubts** and novel ideas, as a result, some of the most valuable insights never surface [1].
- Existing AI facilitators focus only on what is publicly said or typed, e.g., monitoring group chat and/or real-time transcription [2, 3].

Our Approach

We introduce a **front-back channel framework** bridging private thoughts and group discussion.

Key Concepts: We augment AI facilitation to:

- Capture private signals (e.g. doubts, disagreements)
- Connect individuals with shared unspoken thoughts
- Scaffold transition into the public discussion

Key Hypotheses

H1 Awareness of shared unspoken thoughts increases confidence in expressing own opinion.

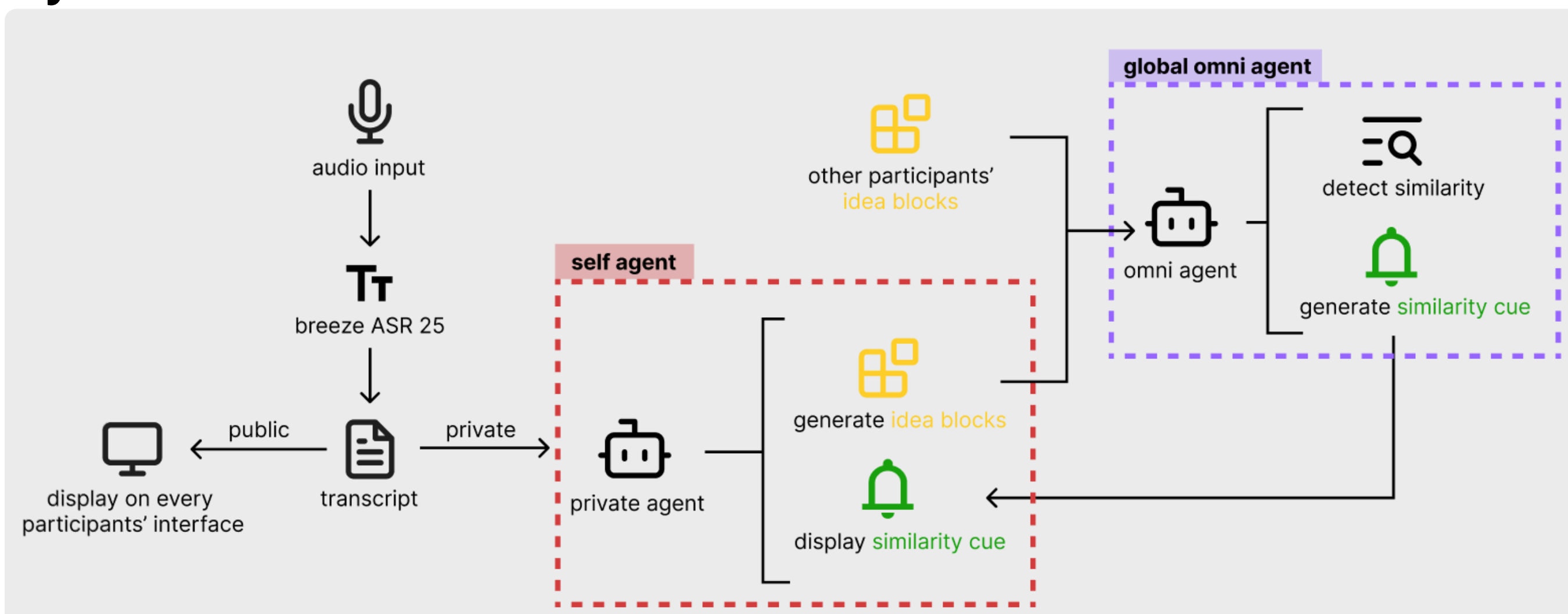
H2 Control over if and when to share increases participants' willingness to externalize ideas in the private channel.

Design Considerations

D1: Reduce **cognitive load** → Enable lightweights input (e.g., quick voice) to capture ideas with minimal effort

D2: Preserve **agency** → The system supports but does not enforces transitions to public discussion

System structure



Idea Block

Participants' voice and text input is continuously structured into concise idea blocks on their private board – visible only to themselves.

Similarity Cue

When the omni agent detects that participants' idea blocks reach the same conclusion through different reasoning, an anonymous cue is surfaced, signaling that **someone else holds a related view**, without revealing their identity or content.

Preliminary study

To evaluate how OmniObserve facilitates the **transition of private thoughts into public discussions**, we conducted a remote between-subjects pilot study.

Task

The **"Lost at Sea" survival ranking task**, specifically chosen to elicit disagreements, minority views, and competing rationales.

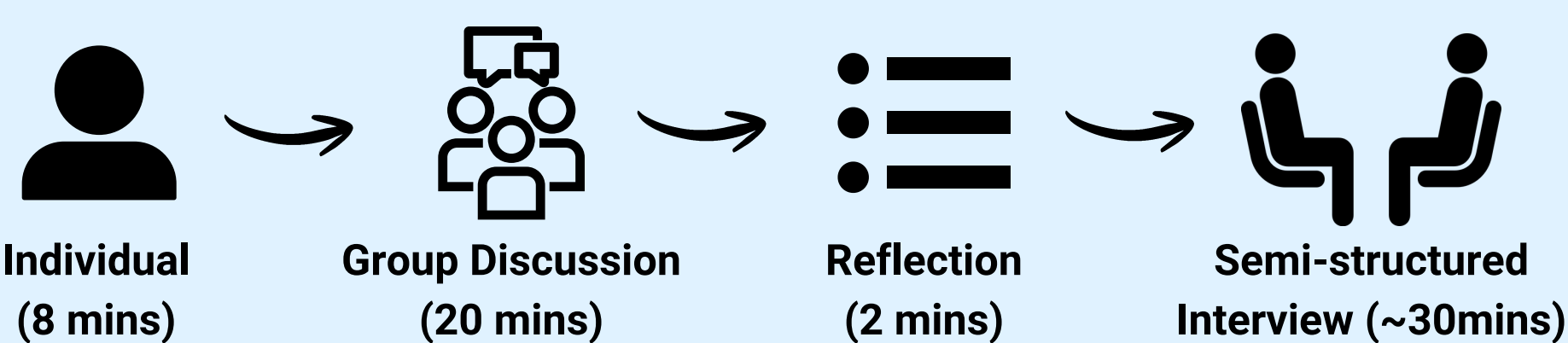
Participants

N = 6 naive participants (3 per group × 2 groups), each group included 1 **confederate** who presented plausible-but-incorrect arguments to elicit private disagreement.

Conditions (1 group each, between-subjects)

Control: Private audio capture only, no AI cues.

Experimental: AI facilitation enabled (the system detects alignment and surfaces shared unspoken thoughts via cues).



Findings

I could secretly check if anyone thought the same and if they did, I knew there are people who would back me up. So I brought it up one more time.

– P1, experimental condition

F1: Similarity creates social support

Similarity cues made some participants feel supported before speaking, reducing the risk of being the only one holding a viewpoint.

I would prioritize yellow blocks as I am interested in being supporters but with different reasons.

– P2, experimental condition

F2: Silence is strategic

Not speaking did not always mean having no idea. Some participants preferred to supplement existing ideas rather than propose new ones.

I would wait until someone else mentioned it first, then I would add my reason.

– P3, experimental condition

F3: Cue meaning depends on participation style

The same cue did not mean the same thing to everyone. "Complementers" used different-reason cues as invitations to add their own reasoning, while "majority-seekers" were only motivated by full agreement or multiple supporters. Cue design may need to accommodate diverse participation styles.

[1] Diehl, M. and Stroebe, W. 1987. Productivity Loss In Brainstorming Groups: Toward the Solution of a Riddle. *Journal of Personality and Social Psychology*, 53, 3 (1987), 497–509.

[2] Doherty et al. 2025. Piecing Together Teamwork: A Responsible Approach to an LLM-based Educational Jigsaw Agent. CHI '25. <https://doi.org/10.1145/3706598.3713349>

[3] Zhang et al. 2025. LADICA: A Large Shared Display Interface for Generative AI Cognitive Assistance in Co-located Team Collaboration. CHI '25. <https://doi.org/10.1145/3706598.3713289>