

## Summary for Paper “The Use of Visual Information in Shared Visual Spaces: Informing the Development of Virtual Co-Presence”

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A shared visual space is a workspace where multiple people see the same objects at the same time. Distance collaboration has become an increasingly common occurrence, and visual information is a critical part in people’s collaboration. Past approaches have proved that a shared visual environment improves communication. However there are several things still unknown, which include the condition under which a shared visual workspace is most useful, and the requirements of such systems.

Past approaches have proved that a shared work area is more helpful and meaningful than a view of each other’s face. People have also tried to find out which features are the most important factors in making the differences. To decide this, tightly controlled laboratory studies are needed.

The task in the paper is that a person helps a worker to complete an online jigsaw puzzle. Several critical functions of shared visual spaces have been pointed out:

- Main awareness of task state: the ability to monitor specific actions
- Facilitate conversation and grounding: the construction of common ground

Authors conclude two ways that how a shared visual space helps to establish a common ground: create efficient messages and monitor comprehension.

The two critical functions that a shared visual space can provide lead to 5 hypotheses about shared visual spaces:

1. Accelerate the speed to complete a task
2. More beneficial for complex tasks
3. More beneficial for tasks whose environments are changing rapidly
4. Value will be diminished by delay
5. People will change the structure of communication

To test these hypotheses, authors manipulated the extent to which participants viewed the same work area (*Fidelity of the Visual Space*), the adequacy of lexical tokens to describe the puzzle pieces (*Color Drift*) and the visual difficulty of the task itself (*Puzzle Difficulty*). Two measures were analyzed: task performance and conversational coding.

About task performance, authors found that their data are consistent with hypotheses one, three and four. There is no evidence to support hypothesis two though. In the conversational coding analysis, hypothesis five is proved. After that the paper examined two types of acknowledgements used in the communication: Acknowledgements of behavior and acknowledgements of understanding.

In the aspect of implications for theory, this study illustrates how features of the task interact with features of the communication setting to influence the grounding process. In the practical aspect, the paper suggests that the utility of a shared visual space depends on the visual complexity of the task.