General Setup Information

The communication task involved two experimenters who each played different roles. First, the main experimenter (called **Experimenter** in the "Experimenter Script") facilitated the grid game by explaining the general rules and guiding the Participant through the task. This experimenter also ran the rest of the control tasks. The second experimenter (called the **Director** in the "Experimenter Script") served as a confederate by playing the game with the participant. The apparatus was a 4x4 grid (see the "Grid Pictures" file for details) that was placed in the middle of a table between the Participant and the Director. Out of the 16 total squares on the grid, four were occluded, such that the person sitting on the Director's side of the grid could not see their contents, but the person sitting on the Participant's side of the grid could see their contents.

During the game, the Director asked each Participant to move objects to new spaces on the grid. Throughout the study the Director wore black matte sunglasses and was instructed to maintain her eye gaze towards the center of the grid when giving each instruction. Thus, the Participant would need to follow the Director's instructions using only the context and verbal cues provided, not any information about the Director's gaze.

In order to code participant's final choices as well as their looking behavior we set up two cameras. One camera was placed behind the Participant and had a view of the objects on the grid allowing coders to observe which object was chosen on each trial. A second camera was placed on the top of the grid, approximately 16 inches from the Participant and was angled toward the Participant's face in order to record eye gaze.

Practice Trial

Before starting the main experiment, each Participant went through a practice trial. In this practice trial, the Participant and the Director switched sides by switching seats, allowing the Participant to both better understand how the task worked and to get firsthand experience with the Director's perspective. This meant that during the practice trial, some of the objects were occluded from the Participant's view. The Experimenter explained the rules of the game to the Participant by saying that the goal was to move objects around the grid, and that the objects would be moved to new places based on the instructions given. The Experimenter also introduced the spatial terms used in the instructions (above, below, next to) in order to be sure the Participant was familiar with these directions.

During the practice trial, the Experimenter helped the Participant give four instructions to the Director (see "Experimenter Script" for more details). For each instruction, the Participant asked the Director to move a specific object to a specific location on the grid. In general, the Experimenter told the Participant what to tell the Director, and then the Participant repeated the particular instruction. If a Participant was not willing to repeat the instruction (for instance because (s)he was shy), then the Experimenter gave the Director the instruction as the Participant watched.

On two occasions, the Director intentionally committed an egocentric error by moving an object that was occluded from the Participant's view. These errors allowed the Experimenter to ask the Participant to give feedback to the Director to correct them.

Upon each correction, the Experimenter introduced the occluded squares and reminded both parties that the Participant's perspective differed from the Director's perspective. After completing the practice trial, the Experimenter asked the Director and Participant to switch seats again, and confirmed that the Participant understood who could see which objects (see "Experimenter Script" and "Grid Pictures" for detailed instructions).

Test Trials

After the practice trial, each Participant received a total of twelve instructions over four different grid set-ups. In order for it to seem like the Director did not know what objects were behind the occluded squares, the Experimenter placed a curtain over the back of the grid while she was setting up each test grid. This curtain blocked the entire grid such that the Director could not see which objects were added to the grid or where they were placed.

Once each grid was set up, the Director gave the Participants three instructions per grid. Each of the four grids featured two unambiguous instructions and one critical test instruction. The critical test instruction was ambiguous and could refer to a mutually visible target object, or to a distracter object that was visible only from the Participant's egocentric perspective. The critical test instruction was never the first instruction on a grid (see "Director Script" and "Grid Pictures" for more details). Each of the four grids featured one critical test instruction that was ambiguous: To succeed, participants had to take the Director's perspective and choose the mutually visible target rather than the distracter, which was hidden from the Director's view. The first instruction on each grid was always an unambiguous filler trial: the critical test trial was always the second or third instruction (see "Director Script" and "Grid Pictures" for more details). Additionally, each child was randomly assigned to one of two conditions (A or B). The conditions differed only in terms of which objects were used for the critical test trials (e.g. in condition A, the car is the target of the first critical test trial, while in condition B the truck is the target of the first critical test trial; see "Grid Pictures" for details on where objects are placed in the two conditions and "Director Script" for details on the critical test instructions for each condition).

Participants were scored based on which object they chose to move after each instruction. While the majority of participants were able to follow the actual instruction of the Director and move the object to the appropriate location, we did not count responses as incorrect if the Participant merely moved the object to the incorrect location. Additionally, if a Participant moved an object to an incorrect location, the Director was trained to modify her subsequent requests for that grid to make sure that they made sense given the new context. During the test trials, the Participant did not receive any feedback from either the Experimenter or the Director about their performance.