

A Inferential judgment task instructions

Instructions

In this survey, you will be shown videos of spoken sentences that include gestures. (Since the videos include spoken words, it is essential that your computer have decent sound capabilities.)

You will be asked what you infer from these videos, and in particular **what kinds of situations they could be uttered in**. For example, suppose you are shown this video, with the accompanying question below it:



To what degree does this video suggest the inference below?

Not at all

Very strongly

The brother of the
person being talked
to is tall.

Many people would find that this video suggests that the brother is tall, because the slapping gesture is oriented upwards. If you are one of these people, you should provide a very high rating for this inference, by filling in the bar appropriately:

To what degree does this video suggest the inference below?

Not at all

Very strongly

The brother of the
person being talked
to is tall.

As a second example, suppose you are shown this video, with the accompanying question below it:



To what degree does this video suggest the inference below?

Not at all

Very strongly

The brother of the
person being talked
to is tall.

In this case, things might be less clear. Some people might find that the video suggests that the brother is of normal height, and if so they should provide a lower rating for the inference. Others might think that the video doesn't provide any information about the brother's height, and if so they might also provide a lower rating for the inference.

Please click to proceed.

Note that there are no right or wrong answers to these questions. **We are interested in the intuitive inferences that you might draw about the situations in which these sentences are uttered.** Feel free to replay the videos as many times as you need, in order to adequately answer the questions.

Don't be surprised if you are sometimes asked to assess videos that you have seen before, as the questions may change from one page to the next (so please make sure you pay attention to the questions). Also, do not assume that different videos are about the same individuals: each sentence should be treated as a fresh utterance. This also holds for the videos you will see on the same page; for each separately, you should ask yourself in what kind of situation it could be uttered.

One final note: the videos you will be shown all pertain to people who are standing at possibly different points on a fire escape. Some are at the bottom of the stairs, some are at the top of the stairs, some are on platforms with stairs going up and stairs going down. When a plural is used to describe the characters (for instance, ‘these three boys’, ‘these three girls’), the characters might but need not be standing in the same place on the fire escape.

Click below to begin the experiment.

I have read and understood the instructions.

B Linear regression models

Unembedded

To determine whether the degree of endorsement differed significantly between the GESTURE targets and AT-ISSUE controls, we fitted a linear regression model to responses to the Unembedded targets, with Condition (GESTURE vs. AT-ISSUE) as a fixed effect. No random effects were included, as Condition was a between-subjects factor, and each participant only received one Unembedded target. A model comparison revealed that Condition was a significant predictor ($F = 19, p < .001$); participants endorsed the directional inference more strongly for the AT-ISSUE control.

Might

To determine whether the degree of endorsement differed significantly between the GESTURE targets and AT-ISSUE controls, we fitted a linear regression model to responses to the Might targets, with Condition (GESTURE vs. AT-ISSUE) as a fixed effect. No random effects were included, as Condition was a between-subjects factor, and each participant only received one Might target. A model comparison revealed that Condition was a significant predictor ($F = 5.6, p < .05$); participants endorsed the directional inference more strongly for the GESTURE target.

Negation

To determine if the degree of endorsement differed significantly between the GESTURE targets and AT-ISSUE controls, we fitted a linear regression model to responses to the Negation targets, with Condition (GESTURE vs. AT-ISSUE) as a fixed effect. No random effects were included, as Condition was a between-subjects factor, and each participant only received one Negation target. A model comparison revealed that Condition was a significant predictor ($F = 34, p < .001$); participants endorsed the directional inference more strongly for the GESTURE target.

Each

We first fitted a linear regression model to responses to the Each targets, with the interaction between Condition (GESTURE vs. AT-ISSUE) and Reading (Existential vs. Universal) as a fixed effect, and random by-participant intercepts. A model comparison revealed that the interaction between Condition and Reading was a significant predictor ($\chi^2(1) = 4.9, p < .05$), indicating that one of the readings was more strongly endorsed in one condition compared to the other. We next fitted models to the Existential data alone, and to the Universal data alone, with Condition as a fixed effect in each case. The subsequent model comparisons revealed that Condition was not a significant predictor of endorsements of the Existential inference ($F = 2.6, p = .11$), while it was a significant predictor of endorsements of the Universal inference ($F = 21, p < .001$); participants endorsed the Universal inference more strongly in the AT-ISSUE condition.

None

We first fitted a linear regression model to the responses to the None targets, with the interaction between Condition (GESTURE vs. AT-ISSUE) and Reading (Existential vs. Universal) as a fixed effect, and random by-participant intercepts. A model comparison revealed that the interaction between Condition and Reading was not a significant predictor ($\chi^2(1) = .23, p = .63$), indicating that there wasn't one inference that was more strongly endorsed in one condition compared to the other. We next fitted models to the Existential data alone, and to the Universal data alone, with Condition as a fixed effect in each case. The subsequent model comparisons revealed that Condition was a significant predictor of endorsements of the Existential inference ($F = 14, p < .001$) and of the Universal inference ($F = 20, p < .001$);

both inferences were more strongly endorsed for the GESTURE target than for the AT-ISSUE control.

Exactly one

We first fitted a linear regression model to the responses to the Exactly-one targets, with the interaction of Condition (GESTURE vs. AT-ISSUE) and Reading (Existential vs. Universal) as a fixed effect, and random by-participant intercepts. A model comparison revealed that the interaction between Condition and Reading was a significant predictor ($\chi^2(1) = 14, p < .001$), indicating that one of the inferences was more available in one condition than the other. We next fitted models to the Existential data alone, and to the Universal data alone, with Condition as a fixed effect in each case. The subsequent model comparisons revealed that Condition was a significant predictor of endorsements of the Existential inference ($F = 6.5, p < .05$) and of the Universal inference ($F = 8.9, p < .01$); the Existential inference was more strongly endorsed for the AT-ISSUE control than for the GESTURE target, while the Universal inference was more strongly endorsed for the GESTURE target than for the AT-ISSUE control.

C Non-entailed presuppositions and gestural cosuppositions

Two recent theories, due to [Klinedinst \(2016\)](#) and [Sudo \(2013\)](#), propose that some expressions trigger presuppositions that are not also entailed by their at-issue content. In this appendix, we explore the possibility that gestural cosuppositions might be of that nature, but show that this assumption is unlikely to help us explain our results: in the conditions labelled Unembedded, Negation, and None, relatively uncontroversial facts about presupposition projection will neutralize the difference between non-entailed vs. entailed cosuppositions (it is unclear whether the Each condition falls under the same category). In the Might condition and especially in the Exactly-one condition, things are arguably different, but positing that gestural cosuppositions are non-entailed won't help explain our data.

Let us first see why in the Unembedded, Negation, and None conditions, the likely effects of presupposition projection neutralize the semantic difference between entailed and non-entailed cosuppositions. In the Unembedded and Negation conditions, the sentence “The boy will / won't [use the stairs]_UP” is expected to project the cosupposition that for the boy in

question, using the stairs involves going up the stairs. Consequently the same overall result is obtained whether the at-issue component is akin to *The boy will / won't use the stairs* (= non-entailed presupposition) or *The boy will / won't go up the stairs* (= entailed presupposition). A similar situation holds for the None condition. Standard experimental results suggest that presuppositions project universally in this environment (Chemla 2009). Therefore “None of these three boys will [use the stairs]_UP” should project the presupposition that for each of these three boys, using the stairs would involve going up the stairs. Under this assumption, the same overall result is obtained whether the at-issue component is that *None of these three boys will use the stairs* (= non-entailed presupposition) or *None of these three boys will go up the stairs* (= entailed presupposition). While it is uncontroversial that a presupposition trigger under *Each of these three boys* gives rise to universal inferences, further tests are needed to determine whether this is due to an entailment or to a presupposition (see Sudo 2013: 75 and Creemers et al. 2017 for relevant discussion).

Let us turn to Might and Exactly-one. Here there is arguably more room for debate about the expected patterns of projection. But if the cosupposition fully projects under Might, “The boy might [use the stairs]_UP” should trigger the inference that for the boy in question, using the stairs would involve going up the stairs. This will again eliminate the difference between an at-issue component akin to *The boy will use the stairs*, or to *The boy will go up the stairs*. The same conclusion holds if the cosupposition universally projects under Exactly-one: “Exactly one of these three boys will [use the stairs]_UP” should trigger the inference that for each of these three boys, using the stairs would involve going up the stairs. As a result, there will be no perceptible difference between an at-issue component akin to *Exactly one of these three boys will use the stairs* or *Exactly one of these three boys will go up the stairs*.

The key question, then, pertains to Might and Exactly-one *when presupposition projection is less strong*. Suppose that “The boy might [use the stairs]_UP” triggers the existential modal inference that for the boy in question, *there is a possibility* that using the stairs would involve going up the stairs (= existential modal projection). Assuming that the gestural cosupposition is non-entailed, the at-issue component of the sentence will be akin to: *there is a possibility that the boy will use the stairs*. It is not clear, on this view, why the conditional target inference (*If the boy uses the stairs, he will go up the stairs*) is somewhat stronger in the gesture target than in the at-issue control (Figure 3), since the inference is licensed in neither case.

Consider now Exactly-one. Presupposition projection in this environment was argued in earlier research to be existential rather than universal in force (in fact, Sudo 2013: 61 relies on embedding under “exactly one” to diagnose non-entailed presuppositions). Thus “Exactly one of these three boys will [use the stairs]_UP” is expected to project the presupposition that for least one of the boys, using the stairs involves going up the stairs. Assuming that the gestural cosupposition is non-entailed, the at-issue component of the sentence will now be akin to: *exactly one of these three boys will use the stairs*. This makes it hard to explain why the universal cosuppositional inference is significantly more strongly endorsed in the gesture targets than in the at-issue controls (Figure 3).

Finally, one could explore the view that in the Might and Exactly-one conditions, an existential cosuppositional inference is, for unknown reasons, more easily strengthened to a universal one when it is presupposed than just entailed. This would indeed account for the contrast between gesture targets and at-issue controls, since an existential version of the conditional inference is obtained by presupposition projection in gesture targets, but by the assertive content of the at-issue controls. (To derive the inference in the latter case, it is crucial to note that *x will go up the stairs* implies *if x uses the stairs, x will go up the stairs*: the existential import of Might and Exactly-one at-issue controls thus suffices to license the conditional inference.) But things would be no different if we went with existential projection *without* the assumption of non-entailed presuppositions. This assumption does not seem to help us explain our data.

References

- Chemla, Emmanuel. 2009. Presuppositions of quantified sentences: Experimental data. *Natural Language Semantics* 17(4). 299–340.
- Creemers, Ava, Jérémy Zehr & Florian Schwarz. 2017. Interpreting presuppositions in the scope of quantifiers: *every* vs. *at least one*. Poster presented at Sinn und Bedeutung 22, Berlin/Potsdam.
- Sudo, Yasutada. 2013. *On the semantics of phi features on pronouns*. Cambridge, MA: Massachusetts Institute of Technology dissertation.