# Speaker adjustments to addressees during language production

On traditional views of speech planning, speakers design utterances to match their listeners' particular informational needs (e.g., by telling listeners things they cannot see but need to know).[1] However, not all choices in production are made for a specific listener.[2,3] For instance, adults mention atypical more often than typical instruments in stories (cf. *stab someone with an ice pick* vs. *a knife*) because atypical components are highly unpredictable for any 'generic' comprehender.[2] Developmental research has focused on children's 'particular' adjustments (mostly to a listener's visual perspective) and has produced mixed findings.[4,5] Here we revisit children's adjustments in production and probe a wider array of factors inspired by the literature on adults' speech planning.[2,6,7] Focusing on mention of instruments, an optional VP constituent, we probe effects of both generic (typicality of instruments) and particular factors (listener's visual access, conversational goals) to instrument encoding during production.

In Experiment 1, 48 adults and 48 4-to-5-year-olds described events to a silent confederate-listener who either saw or could not see the events. In each event, an agent performed an action using a typical or an atypical instrument (e.g., watering plants with watering can/hat; Fig.1). To test how conversational goals affect production, experiments 2-3 modified Experiment 1 by having participants describe the same events to a silent (Exp.2) or interactive addressee (Exp.3) with a specific goal (i.e., to draw the events described). Participants' mention of instruments was measured across experiments. Instrument mention (a binary dependent variable) was analyzed with three mixed effects logistic regression analyses (one for each experiment) with Typicality, Age, and Visual Access as fixed factors and maximal random effects structure justified by the design. Results showed that, across all experiments, children and adults were more likely to mention atypical than typical instruments ($ps<.001$) and adults mentioned instruments, overall, more frequently than children ($ps<.001$). Furthermore, adults were more likely to mention instruments when the events were not visible to their (silent) interlocutor ($ps<.01$; Exps.1, 2) but children did not adjust instrument mention to their addressee's visual access in any experiment ($ps>.05$). A comparison across experiments showed that mention of instruments increased when participants communicated with an interactive interlocutor ($p<.01$; Exp.3).

In sum, both adults and 4- to 5-year-olds performed generic adjustments (by adding information about atypical instruments) during utterance production. Furthermore, unlike adults, children made listener-particular adjustments inconsistently. These and prior findings can be explained by a nuanced model of children's audience design, where adjustments to listener's needs that require frequent updating (i.e., visual access) are harder to implement than less dynamic adjustments (i.e., listener's conversational goals, predictability/typicality of instruments). We conclude that adjusting one's speech to the informational needs of a listener should be viewed as a set of distinct cognitive abilities whose degree of difficulty spans a continuum depending on its cognitive demands. We sketch implications of these findings for current models of audience design.

# References

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# Figures

*Figure 1*. Example stimuli of Experiments 1-3. An agent is performing an action with a typical or an atypical instrument (e.g., a man is watering a plant with a watering can/hat).



*Figure 2*. Proportion mention of instruments in Experiments 1-3.