

## Decoding the pragmatic meaning of polite requests through prosody and facial gestures: a study with 3-year-olds

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While the scaffolding role of gesture (Kelly, 2001; Butcher & Goldin-Meadow, 2000) and in particular facial gestures (Armstrong et al., 2014; Hübscher et al., forthcoming) has been highlighted, explorations of children's ability to access pragmatic meanings through prosody have yielded inconsistent results. While pre-school children ( $\leq 4$  years) only seem to be able to accurately judge a speaker's emotional state based on prosody when the lexical content is either neutral or filtered out (Quam & Swingley, 2012), this ability seems to be compromised when there are competing cues regarding the relevant emotion (Aguert et al., 2013). However, Hübscher et al. (forthcoming) showed that children had a particular sensitivity to intonational cues such as a rising intonation (L\* H%) encoding a speaker's uncertainty (a belief-based emotion) at an age when they have not yet acquired the meaning of lexical cues to uncertainty like *perhaps*.

Following up on these results, the present study investigated 3-year-old US English-speaking children's sensitivity to recognize a speaker's polite stance in their native language encoded through audio-visual prosody in requests such as the following: 'Can you give me the ball, please'. In order to investigate the children's sensitivity to prosodic patterns in comparison with facial expression in the perception of polite stance, the materials were presented in three different conditions (between-subjects): (a) with just prosody available (L\* L% -non-polite vs. L + H\* H%-polite (Figure 2)); (b) with just non-verbal cues available (stern face -non-polite vs. happy face-polite (Figure 3)); (c) with prosody and non-verbal cues available (audio-visual). The stimuli were presented to the children via a powerpoint presentation in which always two pairs of twins are requesting an object (ball / frog etc., Figure 1) in a polite and non-polite way. After children heard and/or saw the requests they were asked to place the requested object in the basket in front of the twin that asked more nicely. We obtained results of 36 participants, each performing in 6 test trials which leads to an overall of 216 answers.

The results showed that 3-year-old children overall performed significantly above chance and thus are clearly able to access a polite stance encoded through audio-visual prosody ( $p < 0.001$ ). Also, there was no significant difference between the performance in the individual conditions ( $p = 0.730$ ) and not only in the audio-visual and visual-only condition but also in the audio-only condition children performed significantly above the mean ( $p < 0.05$ ). The results indicate that 3-year-olds are able to comprehend a speaker's polite stance encoded through prosody, as well as through facial gestural features, as indicators of politeness. Furthermore, very importantly in contrast to studies reporting prosody to be a weak cue for reading emotional state, children actively use prosodic as well as facial gestural features as powerful indicators of politeness.

## References

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## Figures

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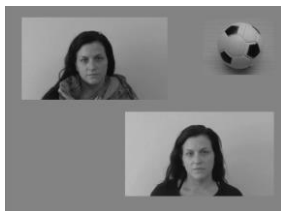


Figure 1. Example of a slide used for a test trial in still position.

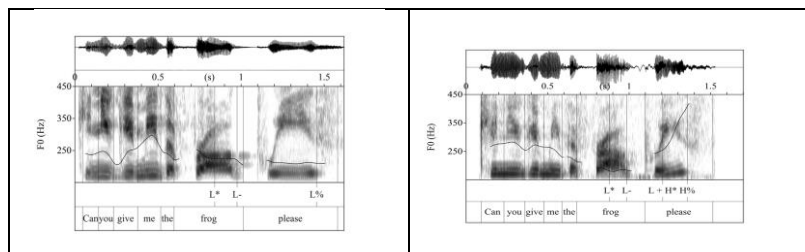


Figure 2. Pitch track, spectrogram and waveform for the polite/interrogative request (top panel) and non-polite/imperative request (bottom panel) stimuli used.



Figure 3. Facial expressions displayed in the polite (left panel) and non-polite (right panel) conditions.