Successful communication requires the recognition of the intentions that underlie language use. One relevant cue is the vocal affect that often accompanies speech. For example, “What a day” means something very different if spoken with negative frustrated-sounding vs. happy-sounding vocal affect. Previous research has suggested young children may not successfully use affect to gauge speakers’ intentions (e.g., [1]). However, recent eye-tracking work [2] has shown that 4-year-olds use vocal affect to guide real-time referential interpretation. However, the generalizability of these results depends on resolving three outstanding issues. First, 4-year-olds’ overt referential decisions in [2] (as reflected in their pointing behavior) did not reflect the sensitivity to vocal affect reflected in their eye movements, suggesting this ability is still at an emergent stage. Second, the data suggested different degrees of sensitivity to happy vs. sad vocal affect. These differences (if replicable) may reflect important interactions between affect valence and language processing systems. Lastly, all critical trials involved ambiguous reference, raising the question of whether children spontaneously use vocal affect when language alone is sufficient for referent identification (e.g., [3]). The current studies address these issues by examining the influence of vocal affect at a slightly more mature stage (in 5-year-olds) where actions and eye movements are likely to be more synchronized, and by including both ambiguous and unambiguous sentences, where valence effects can be assessed with more precision.

In Experiment 1, critical trials presented an array of photos (including two referents of the same kind; e.g., an intact doll, a broken doll, and one distracter item) along with a formally ambiguous pre-recoded instruction (e.g., “Look at the doll...Point to the doll”). The instruction varied in speaker affect: positive, negative, or neutral. Results showed that children used vocal affect to successfully disambiguate the ambiguous utterances: children were correspondingly more likely to look at and point to the broken referent as vocal affect became more negative-sounding (positive<neutral<negative). The patterns with 5-year-olds therefore replicate earlier work but importantly show full synchrony between on-line eye movement patterns and children’s off-line referential choices.

Experiment 2, addresses whether 5-year-olds continue to use vocal affect cues when sentences are unambiguous. Here, object arrays consisted of an intact target (e.g., a doll), an intact distracter (e.g., toy horse), and a broken distracter (e.g., a broken CD). The instruction required identification of the intact target again using sentences where speaker affect was systematically varied (e.g., “Look at the doll...”). Results showed that, prior to the disambiguating noun, children’s eye movements reflected sensitivity to affect cues. E.g., children were significantly “garden-pathed” in the negative affect condition, showing anticipatory consideration of the broken distracter. A final experiment (currently underway) is analogous to Experiment 2 but uses "broken" targets. This will allow a direct test of the relative strength of positive vs. negative affect cues (e.g., by comparing the extent of garden-pathing across experiments). Together, the results highlight children’s increasing mastery of the linguistic and paralinguistic information conveyed in unfolding speech.

References