

## **A longitudinal study of children's intonation in narrative speech**

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Adult narratives display a hierarchical structure where a stratified organization of ideas emerges through the embedding of locally related events within larger segments (Swerts, 1997). This structure is evident in the lexical, semantic and syntactic domains, but also in the prosodic domain. For global information structure is marked by prosodic cues to boundaries, including pauses, low terminal tones, and pitch resets (Swerts, 1997; Vion and Colas, 2009; Swerts and Geluykens, 1994). In comparison to adults' narratives, children's narratives have a flat structure. Again, this structure is evident at the lexical, semantic, and syntactic domains (Diessel and Tomasello, 2005; Berman and Slobin, 1994), but much less is known about the prosodic domain. Still, if narrative prosody also reflects conceptual structure, it is reasonable to expect that it also changes over developmental time as narratives become more complex. The goal of the present longitudinal study of children's narratives was to test this expectation against the data and provide a complete initial description of developmental changes in discourse prosody.

Spontaneous narratives were obtained from 60 children (aged 5 to 7) over a 3-year period. F<sub>0</sub> was tracked to obtain absolute measures of slope steepness and linearity for every utterance of each narrative. These measures are known correlates of syntactic and semantic complexity. For example, longer utterances typically display shallower contours, while phenomena such as pitch accenting and phrasal breaks lead to less linear contours. Slope direction and inter-utterance continuity in F<sub>0</sub> were also calculated. These measures are known correlates of event boundaries in adult discourse. For instance, pitch resetting tends to occur at major breaks in the information flow, leading to discontinuous F<sub>0</sub> transitions between utterances at these event boundaries. As expected, the results indicated systematic developmental changes related to age and year for all prosodic measures except slope steepness, consistent with developmental increases in linguistic complexity and the production of more adult-like narratives. The linearity of the intonation contours was found to decrease across the 3 years, especially among the youngest speakers, in line with increasing syntactic and semantic complexity at this stage of development. Additionally, increases were found both in the proportions of utterances realized with a falling contour and of continuous utterance-boundary transitions. Both of these changes are in the direction of adult narratives. The increase in continuous transitions further suggests that their narratives are becoming more cohesive at a local level, indicating the emergence of a critical component of the hierarchical structure that is found in adult narratives. It is not entirely clear why slope steepness alone failed to show a systematic developmental pattern, but a likely explanation is that this feature is covariate with some other characteristic of typical adult discourse which was not included in our analyses. For example, slope steepness has been shown to be strongly correlated with utterance length (Swerts, 1996). Finally, the evidence also indicates that developmental change in each of the regards seen here is most pronounced between the ages of 5 and 7 years, and levels out afterwards.

In sum, the results suggest that school-aged children's narratives gradually become more adult-like in the prosodic domain, just as they become more adult-like in the lexical, semantic, and syntactic domains. Our next step will be to understand the extent to which changes in the prosodic domains are yoked to changes in the other linguistic domains over developmental time.

### References

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