

## **Accessing children's pragmatic competence through intonational production**

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**Introduction:** In this study, we investigate the question of what type of pragmatic competence children have, and how early it arises in development. We use Norwegian children's intonational productions as a way of accessing their pragmatic competence. Although not yet adult-like, it is assumed that the ability to use intonation functionally (i.e., to signal an utterance's information structure) is largely established by the age of five. However, children's acquisition of intonation in the period prior to five years of age is still a quite unexplored field of research. Furthermore, there have been few attempts to combine suprasegmental phonology with cognitive pragmatic theory in the study of language acquisition (Wharton, 2020). Thus, the question of how children's ability to master intonation as a communicative device develops, is a largely unresolved question.

We investigate the pragmatic function of intonation by focusing on utterances realized with so-called 'polarity focus' (PF) in Norwegian, where the polarity of a proposition is highlighted through intonational means: By accentuation of a 'polarity carrier' (most commonly the finite verb) followed by an additional accentuation later in the utterance, the speaker signals whether she believes that a metarepresented proposition is a true or false description of some state of affairs (Fretheim, 2002). Consider the conversation in (1)<sup>1</sup>:

(1) A: *Jeg kommer meg ikke til butikken!*

I come me not to grocery store-DEF ('I cannot get to the grocery store!')

B (who knows A has an electric car): *Bilen ER LADET.*

car-DEF IS CHARGED ('The car is charged (despite what you seem to think)')

The proposition expressed by A in (1) is that A cannot get to the grocery store. By responding with a PF utterance, B communicates, by prosodically highlighting the finite verb *er* ('is'), that B dissociates herself from a (false) belief that she attributes to A, that he cannot use his (electric) car to drive to the grocery store because it is discharged. B's use of PF allows her to communicate that there is an opposition between what she thinks A thinks, and her own belief.

We hypothesize that the ability to produce PF utterances in contexts where the speaker dissociates from an inferred (false) belief (e.g., (1) above), is acquired around four years of age, together with the emergence of explicit theory of mind abilities (Wellman et al., 2001). However, the minimal requirement for PF utterances is the ability to produce multiword utterances realized with two accentuations (Fretheim, 2002). We therefore expect that the earliest productions of PF utterances occur after two years of age in less complex contexts. To test this, we designed an experiment to elicit PF utterances in increasingly more complex contexts, based on the assumption that negation increases utterance complexity (Just & Carpenter, 1971), and with dissociation from an inferred belief as the most complex condition.

**Method:** Participants include 92 Norwegian-speaking children aged 2;2-5;9 who take part in a semi-structured elicitation task. An experimenter and a handpuppet initially show the participant some toys (e.g., rubber ducks) in an unstructured conversation, in which the handpuppet demonstrates that he is a bit forgetful. The structured elicitation task has four PF conditions with increasing complexity and one control. Notice that the participants are not given any instructions for how to respond in this task. In the PF conditions, the puppet initially states his (positive or negative) prior belief about what he thinks is depicted in a set of upcoming still life pictures (see Fig. 1 for an example item). Depending on the condition, the prior belief is either a match or a mismatch as a description of the picture's motive. The crucial task for the participant is to produce a target utterance in response to the puppet's declared belief (e.g., *gutten LESER bok*, i.e., 'the boy DOES read a book'). In the fourth condition, the use of PF is relevant as a response only if the participant has inferred a (false) belief of the handpuppet (e.g., the PF utterance *du HAR BADEENDENE dine*, i.e., 'you DO have your rubber ducks' in response to the handpuppet's utterance *I wish I had something to play with while taking a bath,*

<sup>1</sup> Upper case letters indicate a focal accentuation (i.e., a tonal rise to an extra high tone).

suggesting that he has forgotten about the rubber ducks that they played with in the initial unstructured section). In the control condition, the handpuppet presents a neutral belief about what is depicted (e.g., *I don't know what the girl does*), where use of PF is not relevant due to there being no proposition to attribute or to highlight the polarity of.

**Figure 1 Example item: Negative-denial condition (Neg-Den)**

Experimenter: *Here is a picture of a boy.*

Prior (negative) belief: *I believe that the boy is not reading a book*

Visual stimuli: A boy reading a book

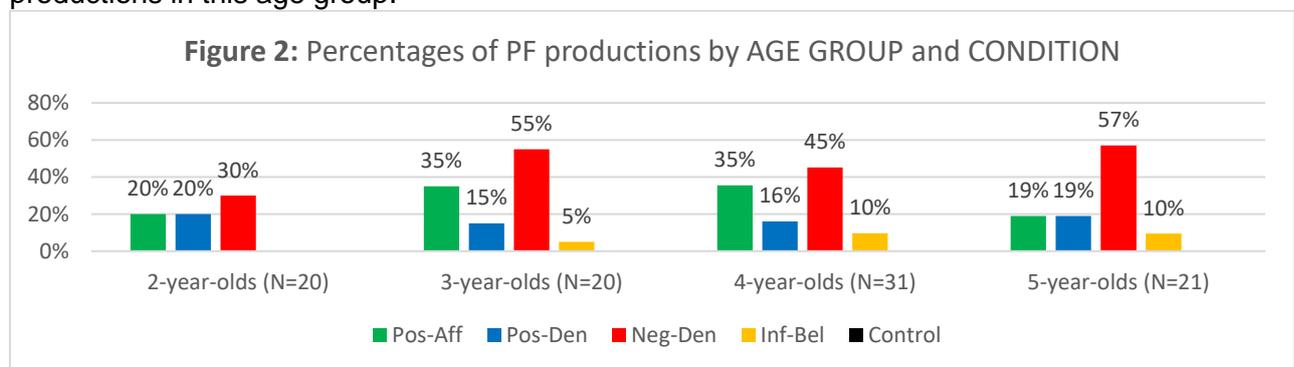
Elicitation question (if needed): *Does not the boy read a book?*

Possible PF response: *gutten LESER bok*

boy-DEF READS book ('The boy DOES read (a) book')



**Preliminary results:** PF is produced in all four PF conditions and there are no PF productions in the control condition (see Fig. 2). Furthermore, there are PF productions in all age groups, and even participants from the youngest age group produced PF in as much as three out of four PF conditions, leaving only the Inferred (false) belief condition without PF productions in this age group.



We fitted a Generalized Linear Mixed Model of the PF productions as a count response with an upper bound and age as a covariate using a binomial error distribution and the glmer function of the lme4 package in R (version 4.1.2) to investigate the development of production of PF with age. The results show no effect of age ( $p = 0.191$ ).

**Discussion:** As expected, we find the ability to use PF to express the dissociation from an inferred false belief to arise around four years of age. Already from two years of age, children have the ability to use PF in contexts with increasing complexity. Strikingly, the Negative-Denial (Neg-Den) condition has by far the highest percentage of PF production across the age groups, which suggests that this is the most natural (or more familiar) context for PF.

An objective of this study is to contribute to a deeper understanding of the cognitive abilities necessary for the production of PF, and what this can tell us about intonational competence as part of a broader pragmatic competence. Our data suggest that already from two years of age children are able to convey their affirmation or denial of an attributed proposition or thought; and, by doing so, they demonstrate an early intention reading ability. The mastery of PF production can be seen as an early linguistic manifestation of children's abilities to (i) consider the knowledge states of others, and (ii) to convey an attitude to an attributed proposition. In its most complex form, the use of PF also indicate an ability to infer the false beliefs of others, arising around four years of age.

**References:**

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