

Signers' perception of conditional intonation:
A comparative study of Israeli Sign Language and German Sign Language

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In sign languages, non-manual components such as eyebrow or head position contribute to the interpretation of various types of sentences, e.g., interrogatives (Liddell 1980) or conditionals (Reilly et al 1990, Dachkovsky 2008), and perform the function of intonation (Nespor and Sandler 1999). However, the **perception** of these markers has not been studied. The present work, the first perception study of sign language non-manuals, investigates their role in **conditional sentences** in two sign languages -- Israeli Sign Language (ISL) and German Sign Language (DGS). While the two sign languages are historically related, ISL is much younger (Meir & Sandler 2008), and our study also aims to trace signers' perception as the system develops over time.

In ISL production, raised brows and forward head movement are consistently associated with the *antecedent* clause of conditionals, and neutral nonmanuals with the *consequence* clause (Dachkovsky 2008). In DGS, the antecedent clause is associated with brow raise and forward head tilt, and the consequence clause with a head nod (Herrmann 2012). In both languages, manual lexical items 'IF' and 'THEN' are optional, and nonmanuals alone typically mark conditionals. In order to investigate whether non-manuals in conditionals function as a clue to their interpretation by addressees, we conducted a perception judgment experiment in ISL and DGS. The experiments were identical in design, procedure, and analysis, differing only in the language of the stimuli, DGS or ISL.

The present study also introduces a diachronic perspective. Previous research on the diachronic development of ISL intonation **production** across age groups has shown that non-manual signals become more systematic and grammaticalized as the language develops (Dachkovsky 2014; see also Janzen 1999; Pfau & Steinbach 2006). In order to trace the diachronic path of the **perception** of non-manual patterns, ISL participants in the present experiment were divided into three age groups of equal size.

During the experiment, participants saw videotaped signed sequences that consisted of a *context*, an intermediate *question*, and a *continuation*. The context story prompted an interpretation of the continuation that was either conditional (antecedent and consequence, see example (A)), or declarative (two independent declarative sentences, see example (B)). The continuation sequences were manually (textually) identical across conditions and differed only in their non-manual marking. Participants were asked to evaluate on a 6-point scale whether the continuation was an appropriate match to the context (6) or not (1). We compared both conditional and declarative continuations in the scope of both context types (i.e., conditional-evoking as well as declarative- evoking contexts).

Preliminary results of the experiment in DGS show a significant effect for targets with conditional marking following conditional-evoking contexts compared to other contexts. That is, DGS participants identified conditional sentences purely on the basis of non-manual markers. Interestingly, while the breakdown by age group in ISL is still in the process of being analyzed, there was no significant effect for the younger sign language when responses of all groups were collapsed, suggesting that language age is a factor in the grammaticalization of intonation.

Example contexts and targets. NOTE: All stimuli were signed. The conditional nonmanuals indicated here, brow raise and head nod, are from DGS, as illustration.

(A) Conditional evoking context:

Context: This afternoon I want to go by train to Göttingen/Haifa. But I read in the newspaper that the trains might strike today. I am really worried about that, because I have an important doctor appointment in Göttingen/Haifa.

Question: MEAN WHAT?
'What does that mean?'

(A.1) Continuation +nm: br hn
TRAIN STRIKE, I HOME STAY
'If the trains strike, I stay at home.'

(A.2) Continuation -nm: TRAIN STRIKE, I HOME STAY
'The trains strike. I stay at home.'

(B) Declarative evoking context:

Context: Yesterday I wanted to go by train to Göttingen/Haifa. At the train station I saw that all connections were cancelled. I had to cancel my appointment.

Question: MEAN WHAT?
'What does that mean?'

(B.1) Continuation +nm: br hn
TRAIN STRIKE, I HOME STAY
'If the trains strike, I stay at home.'

(B.2) Continuation -nm: TRAIN STRIKE, I HOME STAY
'The trains strike. I stay at home.'

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