## **Perceiving** Emotions in Sign Language: Lexical (Words) Vs. Non-Lexical (Tone) Channels

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The emotional content of language is critical for effective communication. Emotion can be conveyed by the meaning of words (lexical channel), and by the emotional tone (non-lexical channel). Previous studies show that the non-lexical channel has more impact on the interpretation of emotion than the lexical channel (Ben David et al., 2016). However, no study has investigated this interplay in sign languages. Signers can express lexical emotions with the use of manual signs, e.g., the lexical signs in "I won the lottery" express happiness. Accompanying facial expressions (Fig.1, A-D) convey non-lexical emotional information. Since facial expressions also signal important linguistic information in sign languages (e.g., raised eyebrows in yes/no questions), deaf people may be more sensitive to the non-lexical channel (Goldstein et al., 1996). Alternatively, as many deaf children born to hearing parents often experience language delays, they may have less emotional exposure than hearing people (Ziv et al. 2013).

To understand the effects of the **hearing status** and **native language exposure**, we examine emotional perception in four groups of Israeli Sign Language signers: deaf native signers, non-native deaf signers born in hearing families, hearing native signers, and non-native hearing signers from hearing families. During the first phase of the project, we adapted for ISL the T-RES, a test designed to assess the complex interplay of lexical and non-lexical (prosodic) channels in the perception of emotions in speech (Ben-David et al., 2016). In this talk, we will present the results (Figure 3) of a perception experiment in which participants rated 30 ISF sentences, expressed in three emotional conditions - sadness, happiness, anger - and neutral (Figure 2).

First of all, we found that the main trends that dominate emotion processing in spoken language are replicated in signed language, when averaged across the different signer groups.

A) *Non-lexical dominance*. In both types of languages, as well as in the hearing and deaf groups, raters provide a higher relative weight to the non-lexical channel than to the lexical one.

B) *Congruence supremacy*. The highest ratings were given to trials that present emotionally congruent lexical and non-lexical cues. This supremacy indicates the ability to accumulate evidence across channels, and it is evident in both spoken and signed language, and for deaf and hearing participants.

In addition to similarities we found that deaf and hearing individuals differ in how they interpret emotions in sign-language. Non-lexical dominance was found to be significantly higher for hearing individuals using sign language than for deaf individuals using sign language. This suggests that hearing individuals may apply their habitual strategies from spoken language to sign language. No significant differences were found between native and non-native signers for the hearing individuals or for the deaf individuals.

Overall, these findings give us a better understanding of the interplay between lexical and non-lexical channels in human language in general



Figure 2: Combinations of lexical and non-lexical target emotions



**Figure 3:** Averaged ratings of four types of sentences (Congruent = target emotion in both channels; Prosody = target emotion is present only in the non-lexical channel; lexical = target emotion is present only in the lexical channel; target emotion absent) for deaf (purple bars) and hearing (yellow bars) participants.

References:

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