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## **EMERGENCE OF NEGATION IN A TURKISH HOMESIGN SYSTEM: INSIGHTS FROM THE FAMILY CONTEXT**

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Deaf children without access to conventional sign language develop gesture systems called homesigns to communicate with their immediate family. Despite the lack of a language model, these systems exhibit many properties of natural languages, including basic syntax [1], stable lexicon [2], complex sentences, and noun phrases [3-4]. One of the challenges in such language creation situations is understanding whether and how the gestures of the family members play a role in the creation of homesign systems. Despite acknowledging the complexity of the gestures in the input, previous studies did not conduct a systematic or detailed analysis of gestures used by different caregivers in the family and their potential impact on homesigners' gestures [5-6]. Thus to what extent gestures used by family members surrounding a homesigner look analogous to homesigners' gestures is understudied. Here, our study focused on a Turkish homesigner child and his family to examine the role of the language model in the emergence of negation, a universal component of human language.

Previously, Franklin et al. [7] analyzed the negation patterns of an American homesigning child, David, on eight play sessions beginning from age 2;10 to 3;11 (years; months). They found that David predominantly used side-to-side headshakes as the main negation marker (84% of 327 negative sentences). Researchers assumed that he co-opted this negative marker from the surrounding hearing culture because his mother and siblings have never been exposed to sign language. Interestingly, the researchers concluded that his negated expressions

reflected the ability of the child to re-invent negation marker without an available language model to guide him. However, in their study, gestures used by different family members around the child were not analyzed to see whether they set up a consistent negation model for him. Thus, the effect of the complexity of the input from language models in the homesign system remains partially unanswered.

To address this issue, we investigate whether the hearing family members of a Turkish homesigner child display a rich and consistent negation model with their gestures, and the child benefits from this model. We observed natural play sessions (182 minutes) of a Turkish deaf child who had severe hearing loss playing with his hearing mother and 13-years-old sister during six different time points beginning from the child's age 5;11 until 6;3. Since there is no comprehensive study on the co-speech gestures of Turkish speakers, the coding template consisted of the negation markers of the Turkish Sign Language [8-9]. The child's and family members' gestures were coded for the presence and forms of negative markers only and compared to each other in terms of form and frequency. Table 1 (see supplementary materials) presents preliminary results of negation forms used by each family member. The child produced side-to-side headshakes as the most frequent marker (39% of all his negative sentences produced). Nevertheless, headshakes were not as common among his mother and sister's negation forms (4,5% and 10%, respectively). Contrary to the child, his mother produced a backward head tilt as the most frequent marker (66% of all her negative sentences), while his sister used a 1-handshape variant (60% of all her negative sentences). They both seemed to present consistent negative strategies as a model and differ from each other and the child. Although their presence in the play sessions varied, the mother and the sister provided significant input (44 and 30 negation gestures in 85 and 97 min. they interacted with the child in sessions, respectively). In comparison, the child produced 102 negation gestures in 182 minutes.

These preliminary results suggest that homesigners can receive rich environmental input [10-12]. However, this input might not be consistent between members of the family. The fact that we found a variation among family members in the types of negation markers is in line with recent findings showing that languages of small communities exhibit more variation than in larger ones [13]. These results also reinforce the previous observation that homesigners are not getting their system from the input [14]: 39% of the child's negative sentences use side-to-side headshake, which does not appear to be the most frequent strategy of either his mother or sister. Finally, the child's most frequent marker supports previous claims that some properties of language are resilient and are less inclined to be affected by input during the creation [1], even when the input can be rich. Rather, the resemblance of reliance on side-to-side headshake between the child

and David also suggests a universally emerging negation strategy. Overall, the study aims to contribute to the scarce literature on how one of the main characteristics of human language, negation, can emerge in a homesign environment where hearing and deaf interlocutors actively participate. Further functional analyses of the negation markers in the gesture utterances of the interactants will be made.

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