

## Adult Homesigners in Nicaragua Independently Innovate Features of their Homesign Systems (ASL/English)

Studying the communication systems that arise in spontaneously occurring cases of degraded linguistic input can help clarify human predispositions for language. Some deaf individuals born into hearing families, who do not receive conventional linguistic input, develop gestures, called “homesign,” to communicate (e.g. 1). We examined homesign systems of four deaf Nicaraguan adults (ages 15-27), and evaluated whether homesigners’ hearing mothers are potential sources for these systems. If homesign is a direct reflection of mothers’ contributions, we would expect mothers to comprehend homesign utterances.

Each Mother (ages 45-60) watched videotaped descriptions of 83 events (e.g. “A man taps a woman”) produced in homesign by her deaf child, and selected, from an array of four, a picture matching the description. We analyzed: a) the *overall proportion correct*, to determine whether each Mother shares homesign with her deaf child, and b) the *picture foils chosen when Mothers erred* to learn which aspects of descriptions they did not understand.

To ensure that Mothers could do the task, Mothers also comprehended spoken Spanish descriptions produced by one of her hearing children. Furthermore, we asked 4 native users of American Sign Language (ASL-Signers; ages 22-66) *who did not know the homesigner or his/her system* to comprehend the same 83 homesign descriptions. If mothers innovate homesign, we would expect them to perform better than ASL-Signers.

Although Mothers comprehended homesign descriptions significantly better than chance (25%), the maximum correct was 76%, and three of four Mothers were not above 54%. Furthermore, Mothers comprehended spoken Spanish descriptions better than homesign descriptions, confirming that Mothers could do the task, and suggesting each Mother shares spoken Spanish with her hearing child more than she shares homesign with her deaf child (Fig.1). We also found, unexpectedly, that ASL-Signers comprehended homesign descriptions better than Mothers (Fig.2). This result confirms that homesign productions contain comprehensible information, and shows that Mothers are not fully sensitive to this information.

On “reversible” items (like the example above), both ASL-Signers and Mothers (Receivers) often chose a foil depicting participants in reversed semantic roles. Adult homesigners systematically express grammatical subject by consistently placing the noun phrase before the verb (2); Receivers’ inability to effectively use this information indicates that neither group understands the homesigner’s system for relating gestures. This is expected for ASL-Signers, but is not expected if Mothers develop homesign structure.

Mothers also selected incorrect foils that indicate they did not understand homesigners’ gestures for participants in the events (e.g. man/woman). Observational evidence suggests that Mothers *do* understand these individual gestures in other contexts; Mothers’ errors in this task may reflect difficulties processing sequences of gestures in homesign utterances, which further supports the notion that some aspects of homesign development are outside Mothers’ influence.

Mothers’ non-comprehension of structural information and difficulty processing homesign suggest that they are not wholly responsible for the development of homesign. Instead, we propose that homesigners themselves contribute uniquely to the development of their own systems. Further research will clarify the specific capacities homesigners possess that support the innovation of their own systems.

### References:

1. Goldin-Meadow, S. (2003). *The resilience of language: What gesture creation in deaf children can tell us about how all children learn language*. In the *Essays in Developmental Psychology series* (J. Werker & H. Wellman, Eds.). New York: Psychology Press.
2. Coppola, M. & Newport, E. L. (2005). Grammatical Subjects in home sign: Abstract linguistic structure in adult primary gesture systems without linguistic input. *Proceedings of the National Academy of Sciences, 102*, 19249-19253.

### Homesigners' mothers comprehend descriptions produced in Spoken Spanish better than descriptions produced in Homesign

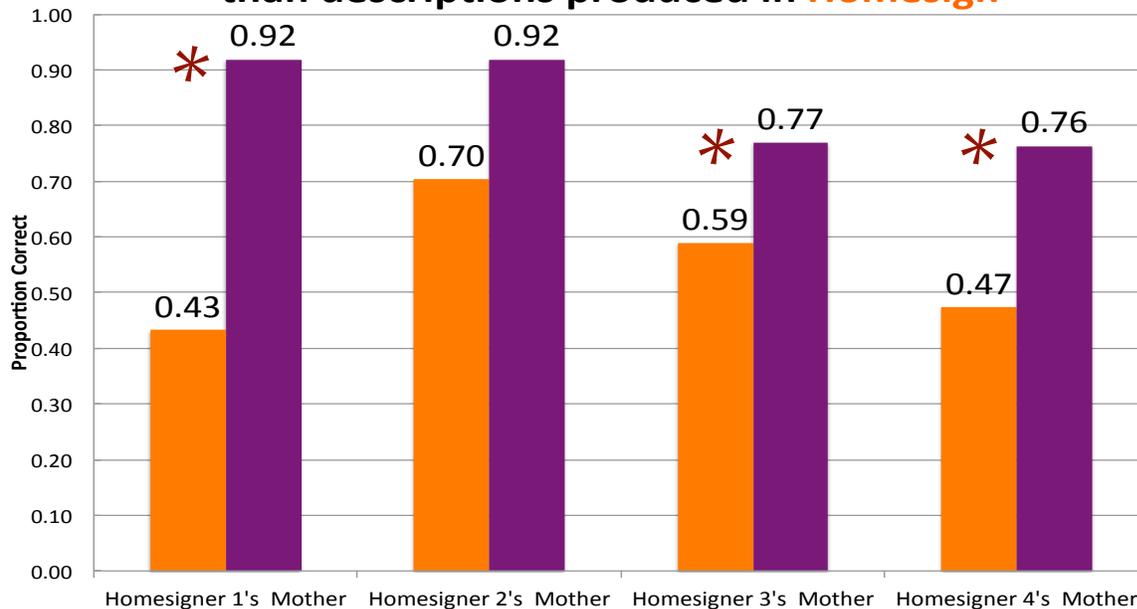


Figure 1: Mothers comprehended both Spoken Spanish and Homesign descriptions at rates significantly above chance (25%; Exact Binomial Test,  $p < 0.001$ ). Starred comparisons are significant at  $p < 0.05$ , McNemar's Test for Correlated Proportions; Mother4's  $p = 0.057$

### ASL Signers comprehend homesign descriptions better than Homesigners' Mothers

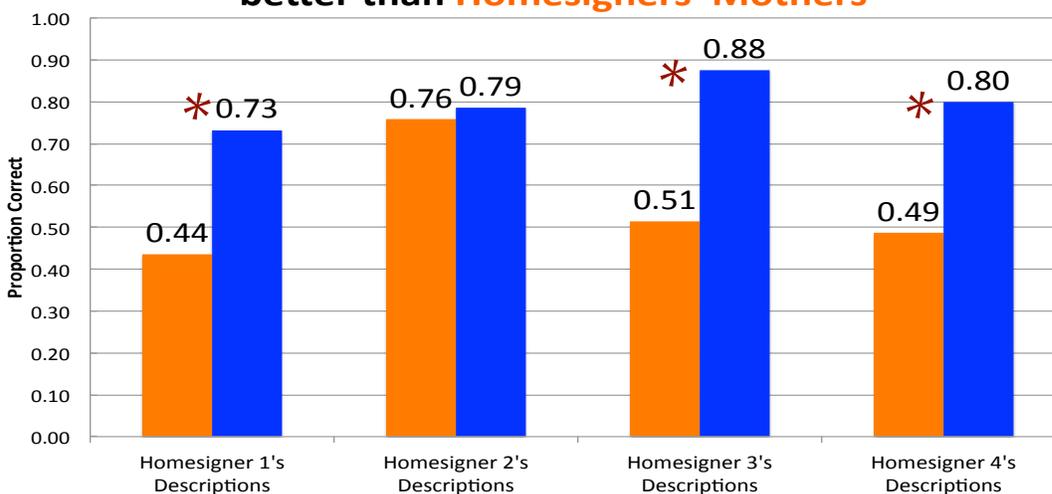


Figure 2: Starred comparisons significant at  $p < 0.01$ , McNemar's Test for Correlated Proportions; Homesigner 2 pair's  $p = 0.057$