A pilot study of deaf children's acquisition of plurality in "verb agreement" in American Sign Language

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A. INTRODUCTION

Objective: To investigate deaf children's acquisition of plural forms in "verb agreement" based on real-world locations in American Sign Language (ASL).

Problem: We do not know how deaf children acquire plural agreeing forms in ASL and other signed languages. Most acquisition studies focused on singular forms, namely person agreement (Fischer (2009[1973]), Meier 1982, Lillo-Martin 1986, Tang *et al.* 2006, among others). A couple generalizations:

1. Children acquire verb agreement morphology based on real-world locations between ages 3;0 to 3;6 (Meier 1982, Casey 2003, Morgan *et al.* 2006). But a few studies do not share this analysis (Lillo-Martin *et al.* 1998, Quadros *et al.* 2001, and Quadros & Lillo-Martin 2007).

2. Prior to acquisition of verb agreement, children produce errors by either omitting verb agreement or agreeing with an incorrect argument. Errors seem to arise from difficulty of establishing spatial loci (Newport & Meier 1985).

Deaf children acquire singular agreeing forms relatively late and produce omission and commission errors in the process. It follows that, given the complexity of plurals, we would witness a similar phenomenon of errors showing up in child sign.

B. SOME BACKGROUND ON VERB AGREEMENT

- "Agreeing verbs" (Padden (1988[1983]) or "indicating verbs" (Johnston & Schembri 2007, Liddell 2000) involve change of directionality, location, and palm orientation as indicated by movement of a verb between spatial loci

- Agreeing verbs inflect for person, 1st v. non-1st person (Meier 1990) and number, singular and plural (Padden (1988[1983])

➢ There is no single obligatory plural marker, but several ones:

← MULTIPLE: Denotes collective meaning; occurs in a horizontal sweeping movement

EXHAUSTIVE: ➔
Denotes distributive meaning; occurs as 2+ small displaced repetitions of singular form

← RECIPROCAL/DUAL: similar to exhaustive in form. Reciprocal denotes a mutual relationship of action between two referents. Dual denotes two referents

- Paradigmatic gaps for plural forms are common due to articulatory constraints

- Children have to learn the distinction between singularity and plurality, then several plural markers and identify which marker can(not) occur with each agreeing verb

- Children also have to learn the meaning of each plural marker and learn to assign it to the appropriate context

C. HYPOTHESES & PREDICTIONS

Plural agreeing forms are more morphologically complex and less productive than singular agreeing forms and also anticipated to be infrequent in parental input (Mathur & Rathmann, 2010). Thus, the deaf child's acquisition of plural agreeing forms is predicted to unfold this way:

1. Singular forms are acquired first before plural forms. Children incorrectly use either uninflected (citation form) verbs or singular forms as a substitution for plural forms in obligatory contexts;

2. Children also incorrectly inflect plural forms in respect to meaning. They produce plural forms as unanalyzed or partially analyzed forms;

3. Children do not appear to produce infelicitous plural forms in respect to articulation, nor do they overgeneralize plurality to non-agreeing verbs;

4. There is general variation in order of acquisition in respect to the type of plural marker, but reciprocal appears to be acquired later than multiple or exhaustive.

The predictions are tested against experimental data from children and adults.

D. METHODS

1. Elicitation Task (ET)

- Child subjects: *n* = 5. Mean age was 4;6
  All 3rd generation deaf on at least one parent's side of family
- Adult subjects: *n* = 5. All 2nd or higher generation deaf on at least one parent's side of family
- 10 video clips feature short skits, presented in random order
- 1 practice item, 9 test items
- Each skit depicts different numbers of live human actors either performing or undergoing specific actions
- Each skit denotes 1 of the 3 "literal directional" verbs GIVE, TAKE, and SHOW
- Skits designed to elicit various plural agreeing forms for object agreement
- Subjects watch skits and describe actions of the agent to experimenter
- Images as real-world locations for verb agreement
- Adults also watch skits and describe them to another deaf signer who cannot see
- Reward: feeding a stuffed toy or playing with a sticker book (children only)

2. Imitation Task (IT)

- Same subjects (children only) from ET
- 17 model sentences presented in random order
- 2 practice items, 15 test items
- Test items contain various plural agreeing forms of the same verbs for both subject and object agreement; some involved pointing (non-1st person pronouns)
- 4 stuffed animals placed on the table as real-world locations for verb agreement
- Child is instructed to copy every sentence modeled by experimenter
- Reward: feeding a stuffed toy or playing with a sticker book

E. PRELIMINARY RESULTS & DISCUSSION

Elicitation Task
- About 66% of responses constituted agreeing verbs (30 out of 45), but only 38% constituted plural forms (17 out of 45)
- About 16% of responses constituted handling classifiers & about 18% non-agreeing verbs
- Errors were infrequent; most salient one is use of exhaustive marker instead of reciprocal or multiple by TV (3;4) ➔
- Oldest subjects, BF (5;10) and NP (5;11), demonstrated less number inflection than their younger peers, RD (4;10) and CL (5;4)
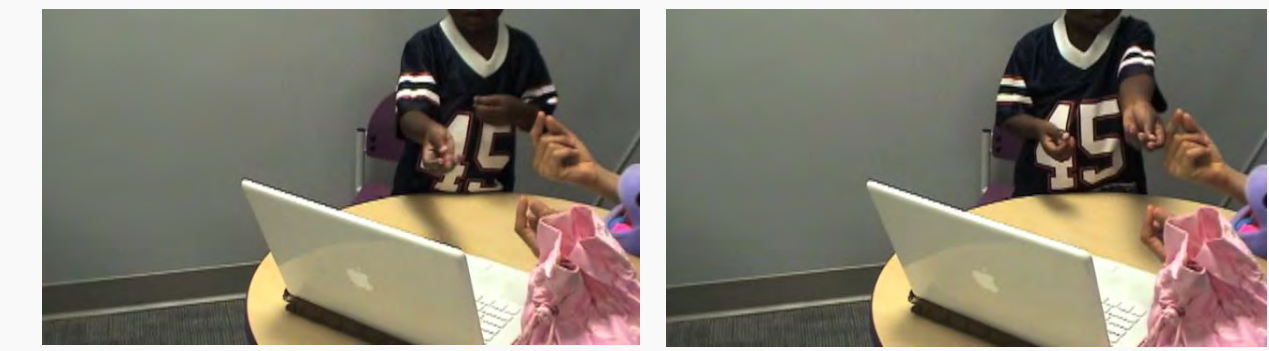
- Adults: About 87% of responses constituted agreeing verbs (39 out of 45),
- But only 42% constituted plural forms (19 out of 45) not statistically higher than the children's
- About 29% of responses constituted handling and entity classifiers; about 11% non-agreeing verbs
- Not much difference in adults' responses based on abstract loci
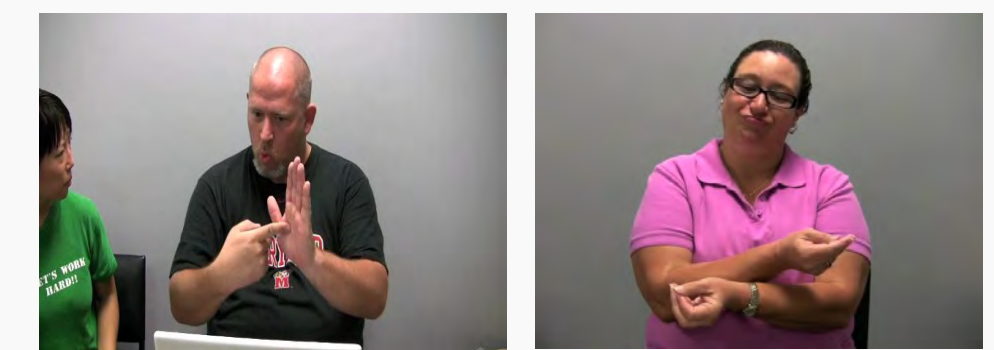
➢ Plural marking seems to be non-obligatory whether spatial loci are real-life *or* abstract locations
➢ Acquisition of plural marking seem to occur after 3;6 – 4;0
➢ Knowledge about plural marking as optional impacts grammatical development of plural agreeing forms around age 5;0 – 5;6

Imitation Task
- Coding of response was based on the imitation of the target verb. Correct if the subject signed the target verb successfully. Incorrect if the subject omitted the plural marker or used a different plural marker / another sign
- All subjects' responses for each target sentence ranged from 60% to 100%
- In the case of TV (3;4), he imitated plural forms well, but based on his ET results, his imitations were unanalyzed & partially analyzed forms
- All subjects also produced a few errors in their responses by using the wrong plural marker & tended to omit pronouns
- For exhaustive forms, subjects distinguished 2 displaced repetitions from 3, but not 3 from 4

➢ Ability to produce plural agreeing forms via imitation appears to be not contingent on knowledge of meaning of general & specific plurality

F. TENTATIVE CONCLUSIONS & FUTURE LINE OF RESEARCH

➢ Acquisition of plurality occurs late, possibly around age 4;0
➢ Thus overall acquisition of verb agreement morphology appears to be a piecemeal process, since acquisition of number agreement does not occur at the same time as person agreement
➢ Elicitation experiment involving movies successful
➢ Protracted development appears to be related to the semantic analysis of various plural markers
➢ More subjects participate in the study to confirm tentative conclusions Ultimate goal of the study is to have a total of 12 children (balanced across all ages) and 12 adults

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