



ESRC Deafness Cognition and Language Research Centre

British Sign Language Grammaticality Judgement Task:

Exploring age of acquisition effects in British deaf adults

Adam Schembri, Eleni Orfanidou, Kearsy Cormier & David Vinson
Deafness Cognition & Language Research Centre
University College London

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Language transmission in Deaf communities

- ◆ A critical/sensitive period in first language acquisition? (Lenneberg 1967)
- ◆ Age of acquisition (AoA) effects
 - ◆ "Whether and how variation in age of acquisition affects ultimate language attainment and processing is a complex question with important theoretical and applied ramifications" (Boudreault & Mayberry, 2006: 608)
- ◆ Deaf communities as test case for AoA effects in language acquisition
 - ◆ Only $\leq 5\%$ of American deaf children are native signers (Mitchell & Karchmer, 2004)
 - ◆ Most ($\geq 95\%$) are born to hearing families which do not sign

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Non-native sign lg acquisition: L1 vs L2

- ◆ Some clear cases of delayed L1 sign language acquisition
 - ◆ e.g. where spoken lg acquisition and literacy has failed
- ◆ But in some cases, sign language could be L2
 - ◆ e.g. where there is skill in spoken/written language
- ◆ Distinguishing L1 vs L2 status of a sign language can be difficult

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Sign language as L1 vs L2

- ◆ Attempts to distinguish L1 vs L2 in studies of AoA effects in sign languages
 - ◆ Newport (1990), Mayberry (1993), Mayberry & Lock (2003), Boudreault & Mayberry (2006), Morford et al. (2008)
 - ◆ E.g. ASL as L2 when born hearing (English L1) but deafened in childhood between ages 8 & 12 (Mayberry 1993)
- ◆ Various studies: ASL as L1 determined by inability to use spoken English or "limited knowledge of English", as determined by self-report
 - ◆ Problem with self-report: Bilingualism
 - ◆ Determining degree of bilingualism in deaf individuals can be difficult, esp in late learners

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Sign language as L1

- ◆ Other possibility for determining L1: reading ability
 - ◆ Reading correlates with speechreading in deaf individuals (Mohammed et al. 2006)
- ◆ Current study: A grammaticality judgement task based on ASL GJT (Boudreault & Mayberry 2006)
- ◆ BSL version considers reading performance and nonverbal IQ to more directly assess critical period hypothesis

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ASL grammaticality judgement task

- ◆ Boudreault & Mayberry (2006)
- ◆ Aim: to test whether AoA affected off-line grammaticality judgement of different syntactic structures
- ◆ Stimuli: grammatical and ungrammatical sentences
 - ◆ Ungrammatical sentences were created by moving a constituent to an incorrect position in the sentence
- ◆ Participants were instructed to focus on detecting errors in the structure of the stimuli, including non-manual marking, sign order and/or the use of space

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Participants in the ASL study

- ◆ Native (N=10)
 - ◆ AoA from birth
- ◆ Early (N=10)
 - ◆ AoA ages 5 - 7
- ◆ Late (N=10)
 - ◆ AoA ages 8-13
- ◆ All participants:
 - ◆ born deaf
 - ◆ minimum 10 years daily ASL experience each
 - ◆ none reported ability to navigate through daily life via speech & speechreading alone

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ASL study: results & implications

- ◆ Results
 - ◆ Strong AoA effects on accuracy, and an interaction between grammaticality and AoA for most structures
- ◆ Conclusions
 - ◆ Delayed L1 acquisition affects ultimate attainment of ASL morphosyntax

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BSL Grammaticality Judgement Task: Aims

- ◆ To test the claims made about delayed L1 acquisition of ASL morphosyntax...
- ◆ On an unrelated signed language (BSL)
- ◆ Using external measurements of:
 - ◆ Reading, as proxy measure of English language proficiency (General Reading Test II, Vernon-Warden/Kirklees Reading Test)
 - ◆ Nonverbal IQ (Wechsler Abbreviated Scale of Intelligence)

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Design

- ◆ BSL stimuli were created based on ASL task:
 - ◆ same syntactic structures
 - ◆ generally same method of creating ungrammatical sentences (some modifications due to grammatical differences between ASL and BSL)
 - ◆ same instructions

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Example: Simple sentences

Simple sentences with plain verbs
 Ungrammatical item produced by moving verb into an incorrect position in subject noun phrase:

HEARING BOY FROM FRANCE WANT HOME NOW
The hearing boy from France wants to go home now

*HEARING BOY FROM WANT FRANCE HOME NOW

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BSL participants recruitment

- ◆ ASL GJT
 - ◆ ASL as primary language for 10 years minimum
 - ◆ Deaf from birth
 - ◆ AoA groups as native, ages 5-7, and ages 8-13
 - ◆ Inability to navigate everyday life through the exclusive use of speech and speech-reading
- ◆ BSL GJT
 - ✓ BSL as primary language for 10 years minimum
 - ✓ Deaf from birth (most)
 - ◆ AoA from birth (native) and from ages 2-17 (non-native) - continuous variable
 - ◆ Some (esp late learners) reported ability to navigate everyday life through the exclusive use of speech and speech-reading

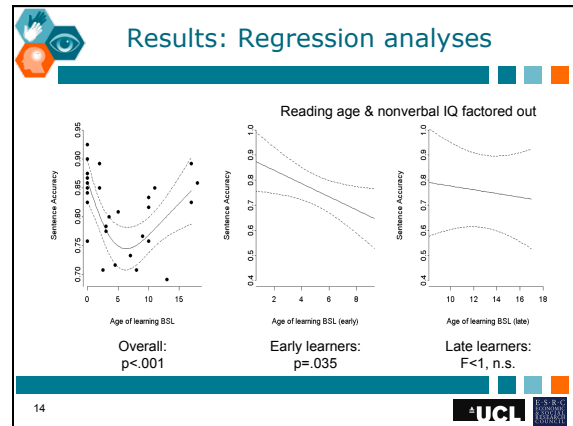
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BSL participants

	N Total	N Deaf from birth*	AoA (mean)	AoA^ (range)	Mean years of BSL use (range)
Native	10	9	0	0	40 (20-57)
Early	11	8	4.4	2-8	32 (17-51)
Late	9	7	12.8	9-17	18 (10-26)

*All participants deaf before age 5 ^AoA analysed continuously not categorically



- ### AoA and reading age
- ◆ Mean reading age for late learners (13.4 yrs) significantly higher than for early learners (10.7 yrs, $p = 0.030$)
 - ◆ Suggesting late learners have higher level of proficiency in English than early learners
 - ◆ However, both groups: far lower reading ages than minimum "adult"-level norms

- ### Early learners: L1 age of acquisition effects
- ◆ Even when possible confounds of reading age and nonverbal IQ are factored out, still significant effect of AoA in early learners (AoA up to around age 8)
 - ◆ First unequivocal evidence of L1 acquisition effects in a sign language
 - ◆ Supports and strengthens other research on AoA effects in delayed L1 signers via self-report (e.g. Boudreault & Mayberry 2006)
 - ◆ Late learners, different story...

- ### Late learners: L1 differs from L2 acquisition
- ◆ Mayberry (1993)
 - ◆ Differences between prelingually deaf L1 signers (deaf from birth) and postlingually deaf L2 signers of ASL (born hearing, deafened between age 8-12)
 - ◆ Here we have evidence of L1 vs L2 acquisition effects even in two groups of prelingually deaf signers (early and late learners)
 - ◆ This group of BSL late learners appear to have English as L1, which may then have scaffolded learning of BSL (as L2) later in life

- ### Implications
- ◆ Early acquisition of a first language is crucial, whatever the modality
 - ◆ L1 proficiency of written language may be possible for some deaf children...
 - ◆ But a risky strategy to rely on this alone
 - ◆ Bilingual education is best way to ensure that every deaf child has the best chance for successful acquisition in either/both languages (Grosjean 2001)



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