

An experimental study on the time window for acquisition of verb agreement in Brazilian Sign Language

Isaac Gomes/Puc-Rio, Cilene Rodrigues/Puc-Rio, Josep Quer/Icrea-UPF

Language acquisition proceeds through a series of specific sensitive periods (Martohardjono & Flynn, 1995, Dekeyser 2000; Harley & Wang, 1997; Long, 1990), and it has been claimed that morphosyntax is readily acquired in early childhood (Snow & Hoefnagel-Höhle, 1978; Newport, 1990). However, there are non-convergent results from sign languages (SL) with respect to the acquisition of verb agreement. Meier (1982) and Morgan et al. (2006): in American and British SLs, verb agreement is acquired late (it starts around age 3 and goes on well after that); Quadros, Lillo-Martin & Mathur (2001), Casey (2003) and Quadros & Lillo-Martin (2007): in American SL and Brazilian SL (Libras), acquisition of verb agreement starts before age 2. On the face of these results, it is rather unclear what the size of the time window for the acquisition of verb agreement in SL is.

We tackled this issue by conducting an acceptability judgment task with different groups of deaf signing adults of Libras, contrasting age of first systematic exposure to the language (Table 1). The following linguistic factors were manipulated: type of verb (regular/backward agreement), auxiliary (presence/absence), agreement on the verb (object agreement/no agreement). 32 experimental sentences (4 items per condition) with definite animate DPs/proper names in argument position (examples (1)-(8)) were distributed across 8 lists in a Latin Square design. 32 fillers were added, involving position of adverbs, coordination and position of wh-pronoun. The items were all presented as short sentence-videos signed by a native speaker of Libras. Participants judged, using a 1-5 Likert Scale, whether each sentence-video was an acceptable sentence that a signer of Libras might produce. In total 65 signers completed the experiment (40 men and 25 women, with age ranging from 18 to 63). These participants were then divided in 4 groups in accordance with the reported age of first exposure to Libras (Table 1). The First group was composed of signers with deaf signing parents (SDPs), being, thus, exposed to Libras since birth. The other three groups were composed of signers with hearing, non-signing parents (SNDPs), with different ages of first exposure to Libras.

The data were statistically analyzed (ANOVA, repeated measures), comparing the 4 groups. They all showed preference for verbs with regular agreement ($p = .003$), and (except for group 4), they also had a preference for sentences with no auxiliary ($p = .001$). SNDPs all together, as opposed to SDPs, had a greater acceptability of sentences without auxiliary and without agreement ($p = .001$), accepting Auxiliary and Object agreement only in the presence of a regular agreement verb ($p = 0,037$). Thus, age of first exposure affects the adults' morphosyntactic competence in Libras. The similarities among the groups are compatible with the observations that: (a) backward agreement has low frequency in the language (Quadros & Quer, 2010). All signers independently of age of first exposure might have memorized backward agreement verbs, as exceptions to grammatical regularities might be fixed via memory routes (Zhang et al. 2006; Becker et al. 2011); (b) the auxiliary is a topic marker (Lourenço, 2014). Thus, given that sentences with topic and focus require specific discursive contexts (Wilbur, 2012), the lower acceptability of the auxiliary, might reflect the fact that our stimuli were presented in out of the blue contexts. Notice that group 3 was not sensitive to this pragmatic restriction. The general SNDPs' preference for no agreement at all suggests that SNDPs simplify the agreement system of the language and this simplification results in low acceptance of the morphosyntactic complexity involved in backward agreement. Less than 5% of deaf children have at least one parent identified as deaf (Mitchell & Karchmer, 2004), and many SNDPs have late systematic access to a sign language,

(Morford et al. 2012). Thus, criteria for including SNDPs as informants in research about L1-language have been considered (Rathman & Mathur, 2008; Orfanidou et al. 2010). Our results clearly point in the same direction, and indicate the necessity of factoring in these criteria.

- (1) C1 [Regular V, +AUX, +ObjAgr]: JOANA₁ ANDRÉ₁ ₁AUX₂ SEE₂
- (2) C2 [Regular V, +AUX, NoAgr]: BRUNA₁ SANDRO₂ ₁AUX₂ CARE
- (3) C3 [Regular V, -AUX, ObjAgr]: ANA₁ WATCH₂ CARLA₂
- (4) C4 [Regular V, -AUX, NoAgr]: ABEL₁ PROVOCAR JAIR₂
- (5) C5 [Backwards V, +AUX, ObjAgr]: LAURA₁ BRENDA₂ ₁AUX₂ EXPLOIT₂
- (6) C6 [Backwards V, +AUX, NoAgr]: ANDERSON₁ JANETE₂ ₁AUX₂ EXTORT
- (7) C7 [Backwards V, -AUX, ObjAgr]: MARIA₁ IMITATE₂ CARLOS₂
- (8) C8 [Backwards V, -AUX, NoAgr]: CRISTINA₁ INVITE THAIS₂

Table 1. Participants

Group	Age of systematic exposure to LSB	Number
SDPs ₁	Since birth	20
SNDPs ₂	Between 2-4 years old	15
SNDPs ₃	Between 5-7 years old	15
SNDPs ₄	at 8 years old & above	15

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