What breaks in A- and A-bar chains under incomplete acquisition

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Background

- Long-distance dependency formation:
  - A-chain
    - Unaccusatives
      - The paper, burned
    - Passives
      - The paper, was burned
  - A'-chain
    - Wh-questions
      - Who, did you see
    - Topicalization
      - John, I saw
    - Relativized clauses
      - The person, that I noticed

- A-dependency vs. A'-dependency
  - A-dependencies take time to develop in L1 (Wexler & Hirsch, 2006), and are impaired in special populations (natives: Gootzinsky, 1996; 2000; Friedmann, 2001; down syndrome: Fabretti et al., 1997; Kerman & Sabasy, 2001; Clahsen, 2008; SLI (2008)).
  - However, in these populations, the linguistic deficits may be due to non-linguistic impairment.

- General discussion
  - Heritage speakers show deficits both in A- and A'-dependencies
  - There is no reason to assume the chains have not developed in this population
  - What is not accessible: syntax or morphology?
  - The evidence from heritage speakers suggests that morphological under-differentiation and insensitivity to word order variation are implicated in the deficits of A- and A'-dependencies.
  - If this is the case, the source of difficulty may be a controlled (non-automatic) process, which is too costly to follow

- Conclusions
  - Deficits in A- and A'-chains in heritage speakers have a more obvious non-syntactic analysis.
  - Other cases of deficits in long-distance dependencies may need to be reconsidered to determine whether they are indeed syntactic in nature.

Research Question

Q: A-chains seem generally difficult, while A'-chains do not. Is the difficulty associated with A-chain formation purely linguistic—indeed of non-linguistic impairments?

Prediction: if so, we should find a similar asymmetry between A- and A-chains in incomplete language acquisition.

Heritage language:

A language, usually spoken at home, which an individual does not learn to “full capacity.

The acquisition is interrupted by the switch to a different dominant language and is thus incomplete.

Heritage speaker (HS):

A person who grew up hearing (and possibly speaking) a language, who can understand and perhaps speak it to some degree, but who now feels more at home in another, more dominant language (Valdés 2001)

Exp 1: A-chains in Russian heritage language speakers

Materials: 2 x 2 x 2 design
  - voice (active vs. passive)
  - argument order (agent-first vs. patient-first)
  - verb type: actional vs. psych verbs

Participants:
  - 11 heritage speakers of Russian; all born in the US, English-dominant, age of interruption 5-7, pre-screened for proficiency
  - Control: 22 age-matched monolingual native speakers

Method:
  - Sentence-picture matching with auditory sentence presentation

Sample stimuli:
  - The girl is painting the boy
  - The girl is being pointed by the boy

Results:
  - Response times [ms]

Exp 2: A'-chains in Russian heritage speakers (ongoing)

Materials: 2 x 2 design
  - subject vs. object RC
  - pre- vs. post-verbal DP inside the RC: [L_1 Verb DP] vs. [L_2 DP Verb]

Participants:
  - 11 heritage speakers of Russian
  - Control: 12 native speakers of Russian

Method:
  - Sentence-picture matching with auditory presentation

Sample stimuli:
  - Subject relative
    - Subject relative: [lokeba, [loritroing] dol�a, dolpa] the dog that is chasing the cat is mean
  - Object relative
    - Object relative: [lokeba, kōkōl, dolpa, dolpa] the dog that the cat is chasing is mean

Frequency: S > OR (Levy et al., 2007; Saj 2005)

Results: Response accuracy

- Group effect: Heritage speakers showed significantly lower accuracy rate and slower response time than controls
  - No verb type effect: no difference between transitive verbs and psych-verbs
  - Voice effect:
    - Controls: passive significantly more difficult than active (same result for English in the heritage group)
    - Heritage group: no asymmetry between passive and active in response times, but response accuracy with passives is close to chance

- Word order effect:
  - Controls: agent-first order in the passive (AVP) is significantly more difficult than patient-first order (PUP)
  - Heritage group: no response time difference between agent-first and patient first order, but significantly lower accuracy rate for patient-first than agent-first (PVA) order, regardless of voice

Discussion:

- Adult HS appear to have problems with A-bar dependencies, known to be unproblematic for children (Hamburger & Crain 1982, Hirsch & Hartman 2007, Guasti 2000)
- The problem is NOT syntactic in nature:
  - Heritage speakers ignore morphological cues in processing RCs.
  - Shallow processing: Strong subject preference in RC is indicative of reliance on the “first-pass” external argument
  - Only the highest structural argument (i.e., external argument) is accessible to A-bar movement. This could be due to:
    - the parser’s efforts to minimize processing load (parsing only the highest nodes)