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Measuring short term memory for serial order and incidental learning as aptitudes for L2 idiomaticity

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Introduction

Increasing numbers of cross-sectional studies of ultimate L2 attainment are using individual difference (cognitive aptitude) measures to infer past learning processes on the basis of present day associations (e.g. DeKeyser 2000, Abrahamsson & Hyltenstam 2008, Granena & Long 2013). In order for any conclusions to be valid, the cognitive measure must be stable over time, and independent of other predictor variables.

This poster reports on the stability and independence of two versions of a short term memory task which simultaneously measures serial recall ability and incidental learning of statistical structure (IPL), a partial replication of Karpicke and Poon 2004. This instrument was used as an individual difference measure in two studies investigating ultimate idiomatic (lexical) attainment in bilingual adults (n = 79 and n = 33) with advanced proficiency and long experience in their L2 (between 12 and 70 years).

Research questions

(stability): Do UGSpan or IPL show age or L1 attrition related decline?

(independence) Is greater serial recall ability related to increased incidental learning?

Method

Participants

≥ B2 CEFR L1 L2

<table>
<thead>
<tr>
<th>STUDY 1</th>
<th>STUDY 2</th>
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<tbody>
<tr>
<td>N = 32</td>
<td>N = 33</td>
</tr>
<tr>
<td>Living in the UK &gt;13 yrs (M = 37.46, SD = 18.46)</td>
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<tr>
<td>Age of onset &lt; 35 years (M = 18.83, SD = 3.93)</td>
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<tr>
<td>Age at testing (M = 16.32, SD = 16.81)</td>
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</table>

N = 40

Living in PL >12 yrs L2 use (M = 36.68, SD = 9.95)

Age of onset 5-30 years (M = 24.39, SD = 6.24)

Age at testing (M = 10.40, SD = 6.96)

Participants

Study 1, colour names aural-visual

Stud 2, CVC nonwords aural-oral

1. Learning phase: 32 grammatical sequences
2. Testing phase: 15 novel grammatical & 15 ungrammatical sequences

List elements: (in Polish)

Study 1, colour names aural-visual

Study 2, CVC nonwords aural-oral

Method

UGSpan: measure of serial recall of ungrammatical sequences

Incidental pattern learning (IPL): measure of improvement in memory for novel grammatical sequences (Gspan – UGSpan)

Results

Stability: Age, Study 1, N = 79

Stability: (L1 attrition, Study 1, N = 79, Study 2, N = 33)

Independence: UGSpan & IPL, Study 1 N = 79, Study 2, N = 33

Discussion

UGSpan declines with age (r = -0.53, p < .001); IPL does as well, but less so (r = -0.29, p = 0.01). In order to avoid the ‘age-onset-length’ problem in ultimate attainment studies, participants should either be under 45 or alternative measures to length of exposure should be used to allow age to be controlled statistically.

Even after decades of daily L2 use, there is no evidence that measuring serial recall or incidental learning with L1 stimuli (colour words) is affected by L1 attrition.

Contrary to expectations, participants with lower serial recall ability demonstrate greater incidental learning even when controlling for age (r = -0.40, p < .01). This is only evident with visual response mode in Study 1, suggesting lower spans benefit more from redundant cues.

References


