INTRODUCTION

AIM & BACKGROUND

Aim: To examine how the neural underpinnings of online morpho-syntactic processing in late second language (L2) learners of English might be influenced by: (1) L1-background (i.e. language transfer); (2) L2 proficiency

Transfer effects:
- Structural similarities or differences between L1-L2 -> positive or negative transfer [3]
- ERP evidence of transfer effects is still quite scarce [2]

Proficiency effects:
- Distinct patterns of processing in late acquired L2 vs. native speakers
- However, reliance on native-like mechanisms may increase with L2 proficiency [6]

PRESENT STUDY

- Native-French (N=23) and native-Mandarin (N=21) late learners of English were compared to native-English monolinguals (N=17) in a reading ERP study in English
- Nominal morphology: articles and their interaction with singular/plural markers [7, 8]
- English and French make use of nominal morphology (cf. Table 1)
- Mandarin: no singular indefinite determiner and no singular/plural morphology [4]
- Target sentences contained NPs involving mismatching plural morphology and singular indefinite articles

Table 1

<table>
<thead>
<tr>
<th></th>
<th>English</th>
<th>Mandarin</th>
<th>French</th>
</tr>
</thead>
<tbody>
<tr>
<td>i)</td>
<td>They put a book ...</td>
<td>?</td>
<td>✓</td>
</tr>
<tr>
<td>ii)</td>
<td>They put a books ...</td>
<td>?</td>
<td>X</td>
</tr>
</tbody>
</table>

MATERIALS & PROCEDURE

- Target sentences intermixed with 8 types of filler sentences
- Rapid serial visual presentation (300ms, 200ms ISI)
- ERP epochs: -100ms – 1500ms
- Proficiency measures: cloze-test (overall L2 proficiency) and behavioral acceptability judgments (structure-specific L2 proficiency)
- Age of acquisition (French-L1 mean = 14 years; Mandarin-L1 mean = 10 years)

PREDICTIONS

(1) English native-speakers:
- Morphological violation expected to elicit morphosyntactic response (LAN/P600)

(2) French and Mandarin late L2 learners of English:
- LAN/P600
- Possible variations in brain responses related to differences in L1-background, age of acquisition and L2-proficiency measures (cloze-test and error rates in behavioral tasks)

RESULTS

L1-BACKGROUND

- N400+P600 pattern + subsequent anterior negativity was found in the French-L1 and Mandarin-L1 groups (cf. Fig 4 and 5)
- In contrast, an N400+P600 pattern + subsequent anterior negativity was found in the native-English group (cf. Fig 2)

PROFICIENCY LEVEL

- Irrespective of L1-background, the P600 amplitude significantly correlated with L2 proficiency, and more so in terms of structure-specific proficiency (behavioral error rates, r = -0.51, p < 0.05) or age of acquisition (r = 0.45, p < 0.05).
- In a stepwise regression, only the behavioral error rates (acceptability for incorrect sentences) survives as a significant predictor of size of P600 effect

DISCUSSION

- Native-speakers vs. L2 groups: N400/L2 vs. LAN/L1 difference is consistent with lexical/declarative vs. grammatical/procedural basis for morphosyntax in L2 vs. L1
- Late negativity in L2 groups was an unexpected finding (and not easily explainable)
- French vs. Mandarin groups: Similar patterns regardless of L1-background -> no clear support of transfer effects

- L2 proficiency level significantly modulated P600 amplitude
- In line with models predicting that neural underpinnings of L2 processing are better described in terms of proficiency-dependent continuum than categorical L1 vs. L2 distinction (or AOA dependent)
- Structure-specific proficiency more important than cloze test (overall L2 proficiency) in predicting native-like L2 processing

References: