

## **Ambiguity processing in English natives and non-natives**

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The present study aims to contribute to current theoretical debates on the similarities and differences between native (L1) and non-native (L2) sentence processing. The Shallow Structure Hypothesis (SSH) (Clahsen & Felser, 2006) claims that L2ers have difficulty using syntactic information during processing. Others claim L1/L2 differences can be explained in terms of working memory retrieval (Cunnings, 2017) or differences in the efficiency of lexical processing (Hopp, 2014). We investigated how L1 and L2 speakers of English process syntactic ambiguity in English relative clauses (RC), using an offline comprehension task and an online eye-tracking during reading study. In the offline task, participants indicated their attachment preferences for ambiguous sentences similar to (1a) and (2a). The eye-tracking experiment manipulated position of RC, so that it appeared either in subject position (1) or object position (2). Gender congruency with a reflexive was used to force either low attachment (1b/2b) or high attachment (1c/2c). Previous L1 studies (e.g. Van Gompel et al., 2005) have demonstrated an “ambiguity advantage”, with L1ers having shorter reading times for ambiguous sentences like (1a/2a) than sentences where the RC is forced to attach either low (1b/2b) or high (1c/2c). This suggests L1ers may not have a strong low attachment preference. We employed a similar design to test whether L2ers also show this advantage. Individual differences tasks that measure L2 proficiency, working memory and lexical processing speed were also conducted.

We recruited 66 L1ers and 66 L2ers with intermediate to advanced levels of English proficiency, from an L1 that prefers high attachment (Spanish, Italian, Greek, French, German, Dutch, Arabic and Russian). All the L2ers started to learn English as a foreign language at school from age 4 onwards. The behavioural results indicate both L1 and L2ers exhibited a strong low attachment preference for RCs in both positions (Figure 1), but the preference was stronger for object position compared to subject position. Also working memory was positively correlated with the low attachment preference in both groups. The eye-tracking data at the critical region (Figure 2) suggested a low attachment preference in L1 and L2ers as they had significantly longer total reading times for high attachment compared to low attachment and ambiguous condition, irrespective of whether the RCs were in subject or object position. The same preference was also seen in other measures, including regression path times and total reading times at the post-critical region (“some books”) in both groups. The current results show that offline processing was modulated by RC position and working memory. Also, L2ers employed the same parsing principle as L1ers during offline and online processing as they both preferred attaching low over high, which stands in contrast to SSH. This finding suggests that participants employed a parsing principle that preferred local attachment to minimise cognitive load in L1/L2.

Further analysis will be conducted to examine whether working memory, lexical automaticity and L2 proficiency, as a covariate, play a role in real-time ambiguity resolution. These analyses will help us examine whether individual differences influence attachment preferences in L1 and L2ers to a similar degree. Implications for theories of L1/L2 processing will also be discussed.

## Examples.

Subject position

**(1a)** The brother of the man who bought himself some books lived here. (ambiguous)

**(1b)** The sister of the man who bought himself some books lived here. (low attachment)

**(1c)** The brother of the lady who bought himself some books lived here. (high attachment)

Object position

**(2a)** We knew the brother of the man who bought himself some books. (ambiguous)

**(2b)** We knew the sister of the man who bought himself some books. (low attachment)

**(2c)** We knew the brother of the lady who bought himself some books. (high attachment)

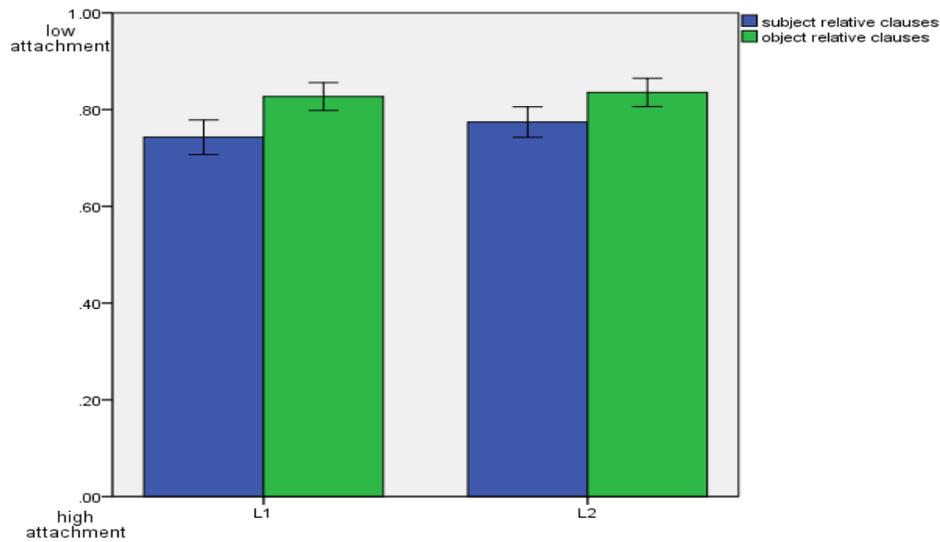


Figure 1. Low Attachment Preferences in the Offline Task

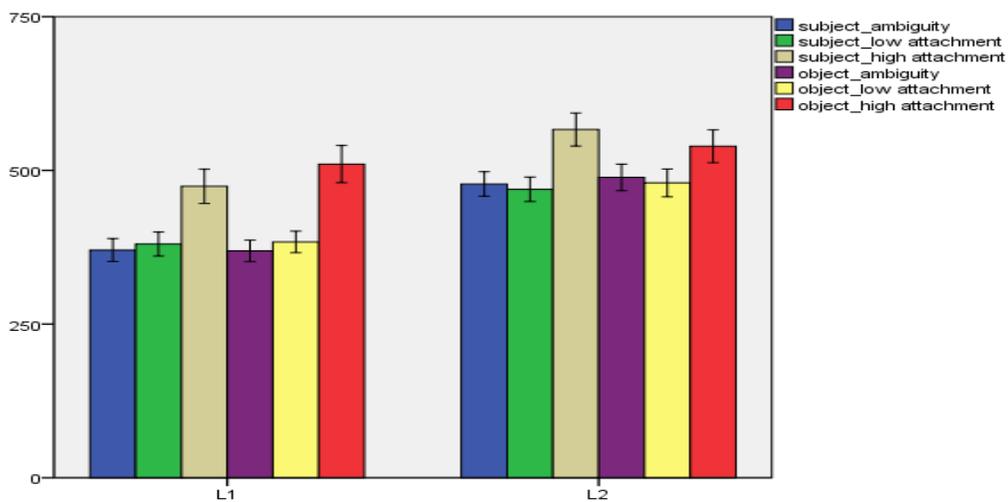


Figure 2. Total Reading Times at the Reflexive