

Prosodic boundary, reading time and pace as predictions for relative clause attachment in ESL¹

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A great number of studies verified different prosodic cues to relative-clause (RC) attachment in English as L1 and L2 (Fodor, 1998, 2002, 2002a, Maynell, 2000; Carlson et. al. 2001; Jun, 2003; Dussias, 2003, Dekydtspotter et.al. 2008; Hwang et. al. 2011; Zahn & Scheepers, 2015). The controversial one is informative *prosodic boundary* (Clifton et al., 2002) such as in (1) that reliably biased listeners to assume a high-attachment (HA) interpretation:

(1) *The criminal shot the servant of the actress [Boundary] who was almost deaf.*

This boundary could inhibit the pace and reading time of a whole sentence as well as critical fragments (*servant* - N1, *actress* -N2, *who was almost deaf* – RC, etc.). In reading aloud task such boundary effect can be controlled by a comma insertion (Steinhauer & Friederici, 2001; Kerkhofs et. al. 2008).

The aim of presented study was to verify this effect in L2 English sentences processing by L1 Russian speakers (fluent L2 English speakers) because of well-researched different RC-attachment preferences in these languages: low-attachment for English (LA) and high-attachment (HA) for Russian (Федорова и соавт., 2007). The aim was to find any significant acoustical predictions for HA vs LA preferences in comma/boundary and no comma/boundary condition.

Results. A mathematical model using logistic regression was constructed for the analysis of predictors of HA vs. LA preferences. The original model included quantitative variables (such as pace and reading times of each sentence and critical fragments (N1, N2, RC)) and one categorical variable (the presence or absence prosodic break) as HA/LA predictors. The model showed lack of statistical significance (chi-square test 14.02, df=7; $p = .051$).

Predictor	Regressi on coeff. B	Std. Error of. B	Wald test	df	p-value
N2 pace, syl. per sec.	0,51	0,23	4,77	1	0,03
RC pace, syl. per sec.	0,80	0,41	3,88	1	0,05
Sentence reading time, ms.	-0,65	0,52	1,55	1	0,21
RC reading time, ms.	2,41	1,07	5,05	1	0,02
Prosodic Break before RC	1,03	0,56	3,35	1	0,07
Constant	-7,96	3,64	4,78	1	0,03

Table 1

A logistic regression model to predict HA and LA (N = 90)

In the second stage two predictors (sentence pace and N1 pace) with the lowest statistical significance were removed from the regression analysis. This improved model is presented in Table 1 with acceptable significance level (chi-square = 12.72; df=5; $p = .026$). The coefficient values indicate that the LA predicted by a high N2 pace, high RC pace and reading latency. LA can be also predicted by a prosodic break while lack of such break indicates a greater probability of HA. The accuracy of HA and LA prediction is quite significantly different: although the overall accuracy is 70% of correct classification, for LA it is only 31%. This shows that reading time, pace and prosodic break could accurately predict HA but not LA.

Keywords: relative clause attachment, prosodic boundary

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