

A divergence between judgments and response times in L2 agreement attraction

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This study addresses a puzzle in the second language processing literature about the use of L2 features that are absent in the L1, and in so doing, it uncovers evidence for a “hidden” L2 agreement attraction effect. Native speakers of languages with number agreement have shown to be susceptible to attraction effects in their L2 [1, 2]. However, there have been conflicting findings about L2 learners whose L1 lacks number agreement, based on studies that examined different languages, structures, and methods [3, 4]. A previous study [5] resolved the conflict by showing that Korean learners of English were prone to attraction with relative clause (RC) modifiers but not prepositional phrase (PP) modifiers, based on end-of-sentence judgments. In the present study we use a modified paradigm with speeded mid-sentence judgments that allow us to measure judgment errors as well as RTs in correctly judged sentences. The judgments replicated the structural contrast in L2 agreement attraction (attraction with RCs, not PPs), but the RTs in correctly judged sentences revealed attraction for both structures. We consider the implications of this hidden attraction effect for accounts of interference in L1 and L2 processing.

A group of advanced Korean learners of English ($N = 36$), with a control group of native English speakers ($N = 36$), participated in a speeded forced-choice task, where participants read English preambles in RSVP and judged whether the following target word was a good continuation or not, as quickly as possible. Critical trials included manipulations of grammaticality, attractor, and modifier type (Table 1), and fillers with different types of errors were included as distractors. The acceptance rates and the RTs for correctly judged trials were analyzed using mixed-effects logit models. The results showed increased acceptance rates for sentences with attractors in RCs but not PPs, only in the L2 group (Table 2, Figure 1), replicating the pattern found in [5] and the conflicting results in earlier studies [3, 4]. The RTs, however, did not show this contrast. There was an overall increase in RTs when an attractor was present, indicating an attraction effect, which did not interact with modifier structure in either group (Table 3, Figure 2).

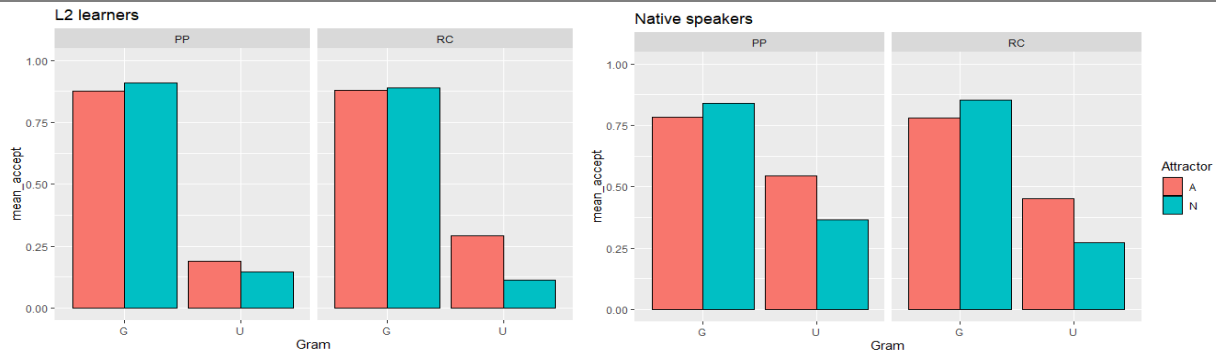
The unique structural contrast in L2 attraction found in the learners’ judgments challenges accounts that predict a general effect of no attraction [3] or similar [4] or greater [6] size of attraction compared to native speakers. Clear L2 attraction from RC modifiers in both the judgments and RTs suggests that speakers of a language that lacks number agreement can still readily use the number cue to compute L2 agreement. Using the number cue sometimes makes the learners incorrectly retrieve the attractor instead of the subject, leading to an attraction effect like native speakers. The case with PP modifiers presents an interesting puzzle: judgments did not show attraction while RTs did. Even though it may appear from the judgments that the attractors played no role in computing agreement, the increase in RTs in sentences with attractors is evidence that the attractors did interfere, even in cases where the learners made correct judgments and when their judgments did not show an attraction effect. We present two possible interpretations of this judgment-RT asymmetry. One is that the judgments and RTs are both products of the same process probed at different time points: the RTs reflect initial competition between the subject and attractor while the judgments reflect subsequent correct retrieval of the subject. RTs increase when there is competition between the [+subject] cue-matching subject and [+plural] cue-matching attractor, causing a delay in retrieval. However, this competition is not strong enough to pass the threshold for producing an incorrect judgment, possibly because the number cue, which is specific to the L2, is not a strong enough competitor for the subject cue that is shared between L1 and L2. Another possibility is that the RTs reflect an equally strong competition between the subject and attractor in the L1 and L2 groups, but there are additional mechanisms associated with the learners’ judgments, such as a self-monitoring system that the learners use to filter out errors and avoid attraction in their judgments. While the interpretation of the judgment-RT asymmetry is uncertain given that most previous works have relied on either one, the comparison between these measures can be particularly informative for cases where judgments show immunity to attraction effects.

Table 1. Experiment conditions and example stimuli

Type	Grammaticality	Attractor	Condition	Preamble	Target word
PP	Grammatical	No attractor	PGN	The artist with the tall sculpture	is
		Attractor	PGA	The artist with the tall sculptures	is
	Ungrammatical	No attractor	PUN	The artist with the tall sculpture	are
		Attractor	PUA	The artist with the tall sculptures	are
RC	Grammatical	No attractor	RGN	The artist who made the sculpture	is
		Attractor	RGA	The artist who made the sculptures	is
	Ungrammatical	No attractor	RUN	The artist who made the sculpture	are
		Attractor	RUA	The artist who made the sculptures	are

Table 2. L2 learners' and native speakers' mean acceptance rates (%)

Group	PGN	PGA	PUN	PUA	RGN	RGA	RUN	RUA
L2 learners	90.86	87.70	14.44	18.92	88.83	88.11	11.11	29.26
Native speakers	80.45	75.38	38.50	54.21	81.67	77.72	28.57	43.98



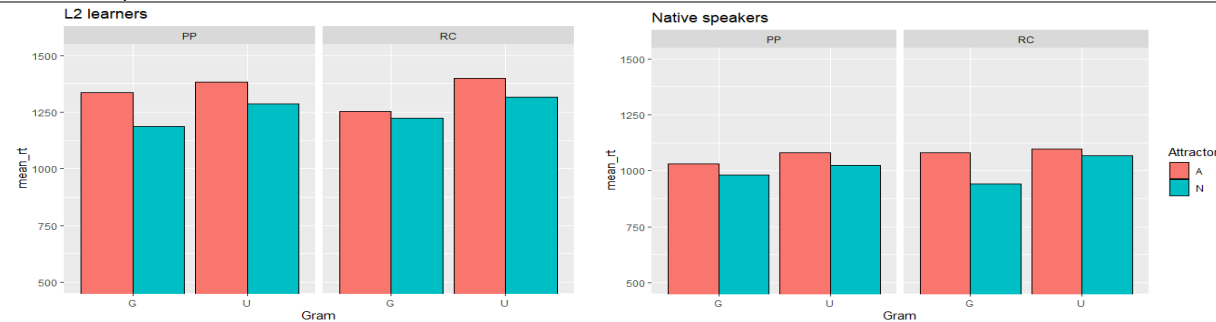
PP: Gram. x Attr.: $p > .05$ RC: Gram. x Attr.: $p < .001$

Gram. x Attr.: $p < .001$ (no interaction with Type)

Figure 1. L2 learners' (left) and native speakers' (right) mean acceptance rates

Table 3. L2 learners' and native speakers' mean response times (ms)

Group	PGN	PGA	PUN	PUA	RGN	RGA	RUN	RUA
L2 learners	1186	1336	1288	1382	1224	1252	1318	1400
Native speakers	978	1027	1018	1097	953	1058	1075	1078



Attr.: $p < .001$ (no interaction with Type)

Attr.: $p < .001$ (no interaction with Type)

Figure 2. L2 learners' (left) and native speakers' (right) mean response times (ms)

References

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