

# Agreement Attraction in Turkish: Effects of Nominal and Verbal Plural Morphemes

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In this paper, our objective is to explore the source of agreement attraction effects in Turkish found by Lago (2018). The interpretation of their finding is complicated by the fact that in their possessive form all head nouns in their stimuli are morphologically ambiguous between possessive and accusative. Due to the mismatch in the frequency of usage of accusative and genitive, which is used as a attractor in this experiment, as a controller, Lago (2018)'s findings could potentially be explained with occasional shallow processing. We have replicated Lago (2018)'s experiment with unambiguous head nouns, and we have found the same agreement attraction effects. However, this may mean that participants may engage in even more shallow processing than we imagined. We postulate that participants solely check for the presence of a *-lar* morpheme, while largely disregarding the remainder of the sentence. We utilize an experiment design in which we use a relative clause with or without plural agreement on the verb in place of the genitive possessor since both verbal and nominal plural morphemes are the same in Turkish. If participants did, in fact, adopt a superficial processing strategy, we would expect to find a number agreement attraction effect similar in magnitude to Lago (2018)'s. However, if number attraction is not an artifact of shallow processing strategies, we should expect to find no number attraction in this experiment.

*Keywords:* Turkish, agreement attraction, task effect, shallow processing

## 1 INTRODUCTION

Attraction errors in production and comprehension of subject-verb agreement, in which a verb does not agree with the grammatical agreement controller, but with a potential attractors, have been the focal point of many research for quite a long time. In fact, it is still a widely researched area in psycholinguistic studies. Despite the thorough research that has been carried out, studies that have been conducted on agreement attraction in Turkish have been extremely few. In fact, Lago (2018) has been the only study to look into this phenomenon in Turkish. Lago (2018)'s study make use of genitive-possessive structures in the subject position, in which the possessive-marked noun is the head of the noun phrase which acts as the grammatical agreement controller, and the genitive noun serves as a potential attractor. In a speeded acceptability judgment study, they found a significant effect of number agreement attraction. However, the interpretation of their finding may be a result of a non-subjecthood cues originating from their use of morphologically ambiguous forms of possessive. In their possessive form all head nouns in their stimuli are ambiguous between possessive and accusative.

In Turkish, accusative number agreement controllers are extremely rare, while genitive agreement controllers are very frequent. Thus, Lago (2018)'s finding could possibly be explained by occasional shallow processing. When all syntactic relations in the sentence were processed fully, the possessive noun should have been identified as the controller. Meanwhile the genitive noun may sometimes have been erroneously identified as the controller during shallow processing, because genitives are more likely

to act as agreement controllers than accusatives. A second alternative explanation of Lago (2018)'s finding may be the fact that participants may engage in even more shallow processing than outlined above. Participants may have erroneously responded *Yes* on some trials due to (i) the presence of a plural morpheme on a noun (attractor or controller) and (ii) the presence of a plural agreement morpheme on the verb. We speculate that on such trials, participants would have simply tried to check for the presence of such morphemes, while largely disregarding the remainder of the sentence.

We first replicated Lago (2018)'s experiment with unambiguous head nouns. To this end, we have revised the items that were used previously, to avoid morphological ambiguity between possessive and accusative forms. The effect found by Lago (2018) replicates with unambiguous nouns as discussed in §2.

§3 discusses the alternative account that posits even more shallow processing as mentioned above and offers a pre-registered experiment using RC attractors with possible outcomes and their indications. Since both nominal and verbal plural morphemes in Turkish take on the same form (*-ler* or *-lar* depending on the phonological environment), we can test this possibility with an experiment, in which we use relative clause with or without plural agreement on the verb in the place of the genitive possessors. An agreement attraction effect similar in magnitude to Lago (2018)'s would mean that participants use aforementioned strategies.

§4 presents a discussion revolving around possible Lastly, §5 offers a brief conclusion and presents topics for future researches.

## 2 REPLICATON OF Lago (2018)

In their study, Lago (2018) investigated the comprehension of subject-verb agreement in Turkish-German bilinguals and Turkish monolinguals. They used speeded acceptability judgments for the effects of number attraction in Turkish. Their sentences makes us of genitive-possessive constructions in the subject position, where the genitive is the attractor and the possessive is the head noun. They have manipulated the grammaticality of the sentence by changing the plural morphology of the verb, and they also manipulated the plurality of the attractor noun. In grammatical conditions, subject and the verb both bears the singular morphology with no overt morpheme. Moreover, in the ungrammatical conditions the verb bears the overt *-lar* morpheme whereas the subject is still singular as exemplified below.

- (1) a. Grammatical, SG attractor  
*Şarkıcı-nın vokalist-i sahne-de sürekli zıpla-dı*  
singer-GEN vocalist-POSS stage-LOC non-stop jump-PST-Ø  
The singer's backup vocalist jumped on the stage non-stop.
- b. Grammatical, PL attractor  
*Şarkıcı-lar-ın vokalist-i sahne-de sürekli zıpla-dı*  
singer-PL-GEN vocalist-POSS stage-LOC non-stop jump-PST-Ø  
The singer's backup vocalist jumped on the stage non-stop.
- c. Ungrammatical, PL attractor  
*Şarkıcı-lar-ın vokalist-i sahne-de sürekli zıpla-dı-lar.*  
singer-PL-GEN vocalist-POSS stage-LOC non-stop jump-PST-3PL  
The singer's backup vocalist jumped on the stage non-stop.

	Monolingual Speakers			
	$\beta$	SE	$z$	$p$
<b>Attraction Task</b>				
Grammaticality	<b>-5.51</b>	<b>0.33</b>	<b>-16.69</b>	<b>.000</b>
Attractor Number	0.14	0.25	0.57	.571
Grammaticality x Attractor Number	<b>1.69</b>	<b>0.53</b>	<b>3.19</b>	<b>.001</b>
Attractor Number: Ungram conditions	<b>0.94</b>	<b>0.26</b>	<b>3.68</b>	<b>.000</b>
Attractor Number: Gram conditions	-0.79	0.52	-1.51	.131

Table 1: Model results for the judgments of monolingual cited from @Lago.

d. Ungrammatical, SG attractor

*Şarkıcı-nın vokalist-i sahne-de sürekli zıpla-dı-lar.*

singer-GEN vocalist-POSS stage-LOC non-stop jump-PST-3PL

The singer’s backup vocalist jumped on the stage non-stop.

They have found a significant effect of number attraction in Turkish ranging between 11%–15% across monolinguals. As seen from the results of statistical analysis in Table (1), acceptability judgments showed an immense effect of grammaticality, and there is also interaction between grammaticality and attractor number which indicates an number attraction effect.

According to Lago (2018)’s stipulation, Turkish genitive case does not provide a strong cue against subjecthood since it is extremely common to see genitive marked subjects in Turkish embedded clauses, as in example (2).

(2) *köy-ü bir haydut-un bas-tı-ğ-ın-ı duy-du-m.*

village-ACC a bandit-GEN raid-NMLZ-3SG-ACC hear-PST-1SG

I heard that a (certain) robber raided the village. (Adapted from Woolford (2009))

91 **2.1 Motivation**

92 **2.2 Modifications**

93 **2.3 Participants**

94 **2.4 Filler Items**

95 **2.5 Results and Discussion**

## 96 **3 EXPERIMENT 2: RC ATTRACTOR**

97 **3.1 Motivation**

98 **3.2 Items and Fillers**

99 **3.3 Expectations**

100 **3.4 Possible Outcomes and Discussion**

## 101 **4 DISCUSSION**

102 Discuss.

## 103 **5 CONCLUSIONS**

104 Intro and repeat.

## 105 **6 ACKNOWLEDGEMENTS**

106 We used the statistical language **R** (R Core Team 2018) for all our analyses. These were implemented in  
107 dynamic **rmarkdown** documents using **knitr** (Xie 2014, 2015, 2018) and **rmarkdown** (Allaire et al.  
108 2018, Xie et al. 2018) packages. All graphs have been done with **ggplot** (Wickham 2016). Thank the  
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## 110 **7 REFERENCES**

111 Allaire, J., Y. Xie, J. McPherson, J. Luraschi, K. Ushey, A. Atkins, H. Wickham, J. Cheng, W. Chang,  
112 and R. Iannone. 2018. Rmarkdown: Dynamic documents for **r**.

113 Lago, S. 2018. Straight from the horse's mouth: agreement attraction effects with Turkish possessors.

- 114 R Core Team. 2018. R: A language and environment for statistical computing. R Foundation for  
115 Statistical Computing, Vienna, Austria.
- 116 Wickham, H. 2016. Ggplot2: Elegant graphics for data analysis. Springer-Verlag New York.
- 117 Woolford, E. 2009. Differential subject marking at argument structure, syntax, and pf. Pages 17–40 *in*  
118 Differential subject marking. Springer.
- 119 Xie, Y. 2014. Knitr: A comprehensive tool for reproducible research in R. *in* V. Stodden, F. Leisch,  
120 and R. D. Peng, editors. Implementing reproducible computational research. Chapman; Hall/CRC.
- 121 Xie, Y. 2015. Dynamic documents with R and knitr. 2nd editions. Chapman; Hall/CRC, Boca Raton,  
122 Florida.
- 123 Xie, Y. 2018. Knitr: A general-purpose package for dynamic report generation in r.
- 124 Xie, Y., J. Allaire, and G. Golemund. 2018. R markdown: The definitive guide. Chapman; Hall/CRC,  
125 Boca Raton, Florida.

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Table 2: A glimpse of the famous *Iris* dataset.

Sepal.Length	Sepal.Width	Petal.Length	Petal.Width	Species
5.1	3.5	1.4	0.2	setosa
4.9	3.0	1.4	0.2	setosa
4.7	3.2	1.3	0.2	setosa
4.6	3.1	1.5	0.2	setosa
5.0	3.6	1.4	0.2	setosa
5.4	3.9	1.7	0.4	setosa

Table 3: Now a subset of mtcars dataset.

	mpg	cyl	disp	hp	drat	wt	qsec	vs	am	gear	carb
Merc 280	19.2	6	167.6	123	3.92	3.440	18.30	1	0	4	4
Merc 280C	17.8	6	167.6	123	3.92	3.440	18.90	1	0	4	4
Merc 450SE	16.4	8	275.8	180	3.07	4.070	17.40	0	0	3	3
Merc 450SL	17.3	8	275.8	180	3.07	3.730	17.60	0	0	3	3
Merc 450SLC	15.2	8	275.8	180	3.07	3.780	18.00	0	0	3	3
Cadillac Fleetwood	10.4	8	472.0	205	2.93	5.250	17.98	0	0	3	4
Lincoln Continental	10.4	8	460.0	215	3.00	5.424	17.82	0	0	3	4



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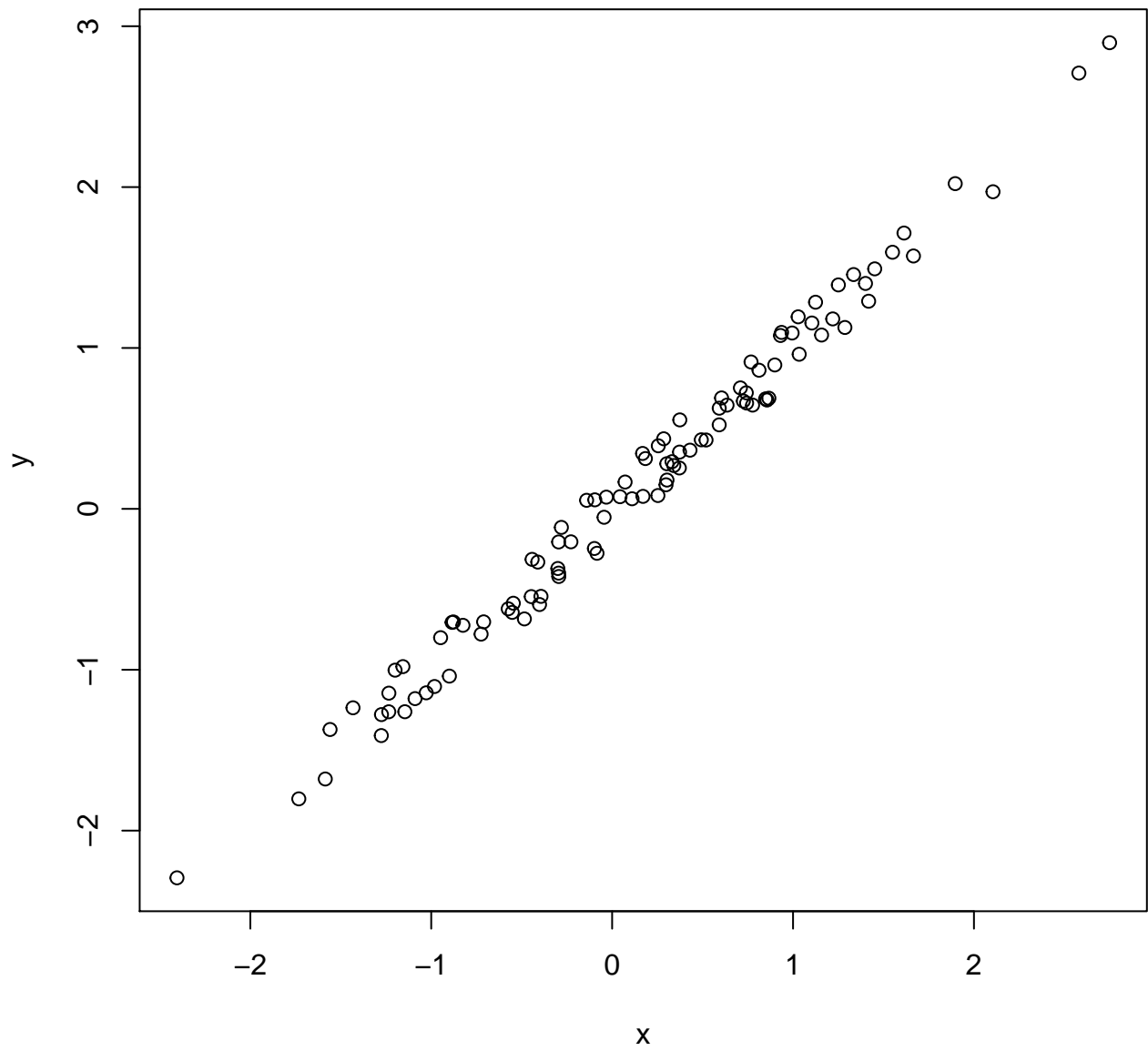


Figure 1: Just my first figure with a very fantastic caption.

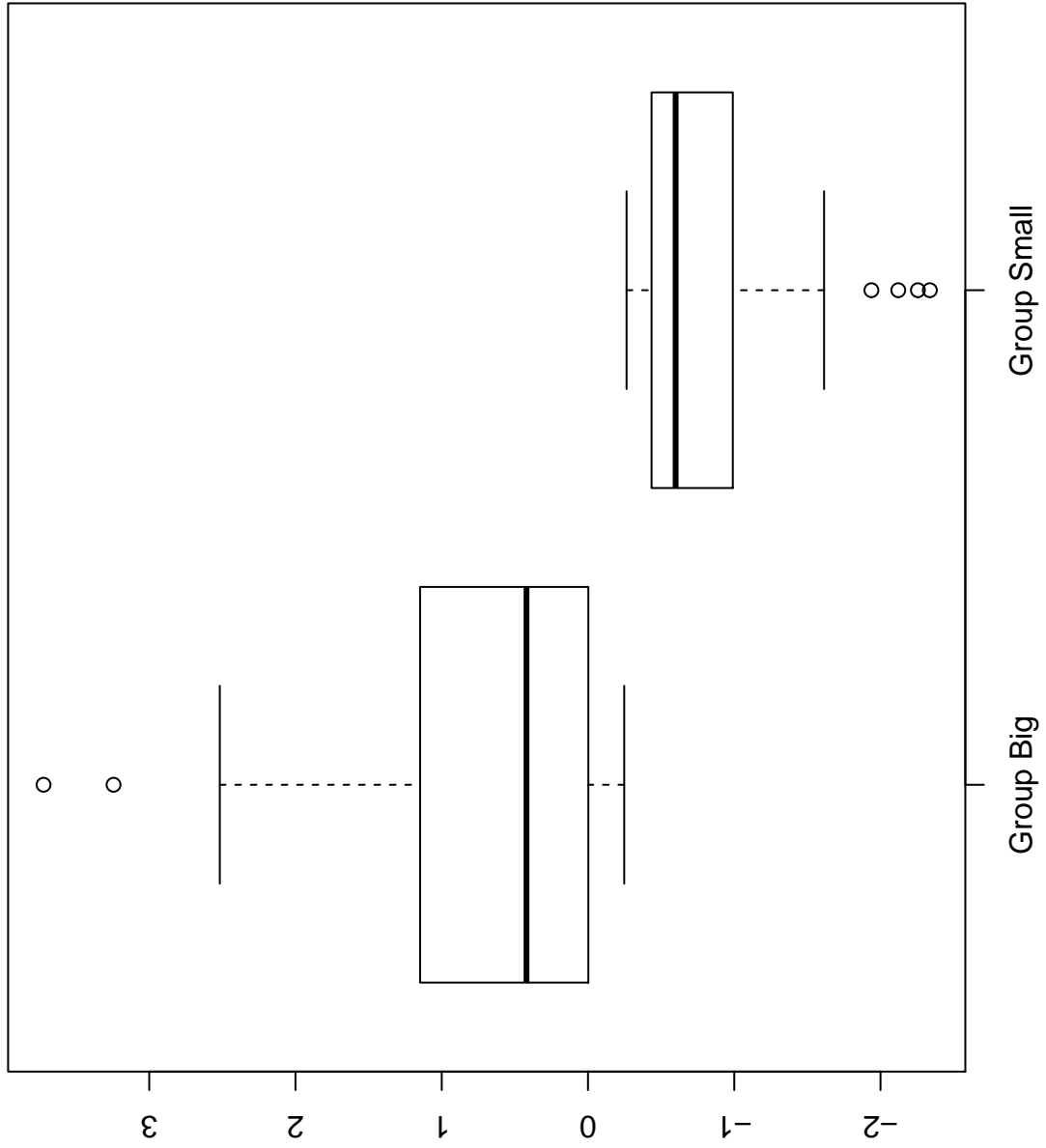


Figure 2: Second figure in landscape format.