Who can it be now? Processing of reflexives and null object pronouns in non-fluent aphasia in Turkish

Seckin Arslan, Semra Selvi Balo, İlknur Maviş

Who can it be now? Processing of reflexives and null object pronouns in non-fluent aphasia in Turkish.

by Seckin Arslan | Semra Selvi Balo | Ilknur Maviş | CNRS, France | Anadolu University | Anadolu University

Abstract ID: 64
Submitted: 01/05/2022
Event: SoA 2022 Bordeaux
Topic: Language and cognition

Introduction and aim

People with aphasia (PWA) often experience difficulty in processing what/who pronouns refer to (see Arslan et al., 2021 for a review). Available studies have evidenced that object pronouns (e.g. him/her) are hard for PWA to work out while reflexive forms are spared (Grodzinsky et al., 1993). Some other studies report object pronouns to be equally impaired as reflexives (Choy & Thompson, 2010). However, we do not know how reflexive forms are affected in aphasia in languages with long-distance reflexives. Another gap in the literature regards null pronoun conditions. The omission of subject/object pronouns is often observed as an error pattern in PWA speaking languages that do not allow pronoun dropping (de Roo, 2003). In a study on Greek, Peristeri and Tsimpli (2013) report that PWA performed less well on overt subject pronouns than on null pronouns. Nothing much has been understood about how object dropping, when object pronouns are dropped, impacts sentence interpretation in aphasia. Turkish has two interesting features. Depending on the discourse constraints, it allows object pronouns to be dropped, and it has two reflexive forms which present a rather flexible binding behaviour. The aim of this study is two-fold: understanding how Turkish PWA process (i) '*kendi/kendisi*' (i.e., itself) reflexive forms, and (ii) overt and null object pronouns.

Methods

We recruited a group of individuals with non-fluent aphasia (n= 6, 1 female, mean age = 48.66) and a control group of non-brain-damaged individuals (n = 26, 13 females, mean age = 42.51). We conducted two eye-movement monitoring during listening experiments.

Experiment 1. Our first experiment investigated the processing of reflexive conditions in Turkish. There are two types of reflexives: *kendi* and *kendisi* 'oneself' which behave rather unconstrained in their binding relation as both local and long-distance reflexives (Gračanin-Yuksek et al., 2017). Our study explored how this reflexive system is impacted by aphasia. The participants were presented with 48 sentences in four conditions (see 1). Two factors were compared: Reflexive Form (*kendi* vs. *kendisi*) and Contextual Bias towards a potential

antecedent (*Local* vs. *Non-Local*).

Experiment 2. Our second experiment explored the processing of overt and null object pronouns in Turkish, in which third-person object pronouns are not gendered and can be dropped. The participants listened to 48 sentences in four conditions (see 2). We compared Pronoun Type (null vs overt) and Contextual Bias towards a potential antecedent (*Non-Local vs. Discourse*).

*(1) Bir [hemşirenin/doktorun] tutuklandığı davada, Hemşire doktorun **[kendini/kendisini]** savunduğu vurguladı.* 'At the court a nurse/doctor was arrested, the **nurse** emphasized that the **doctor** was defending ***kendini/kendisini-***oneself'.

(2) Bir [hemşirenin/hademenin] tutuklandığı davada hemşire doktorun onu savunduğunu vurguladı. 'At the court a nurse/genitor was arrested, the **nurse** emphasized that the **doctor** was defending ***onu/*** '- 3rd.person sg.

In both the experiments the participants listened to the sentences and were presented with four human referents in the visual display referring to the local and non-local referents, discourse/ unmentioned referent entity, and a visual depicting a non-human distractor (e.g., a hospital building). The participants' task was to click on the appropriate referent picture they see on the screen. We used a growth curve analysis approach using a non-linear model following Mirman (2017).

Results

Results from Experiment 1 have shown that the PWA strongly considered a non-local interpretation for both the reflexive conditions compared to the controls (ß=1.54, z = 4.38, p< 0.001), whereas the control group associated '*kendi*' with local and '*kendisi*' form with non-local antecedents. Eye-movement data demonstrated that the PWA had reduced looks for *kendi* conditions to both local (ß= -5.98, z= -3.47, p = 0.001) and non-local antecedents (ß= -3.80, z= -2.61, p = 0.013) as compared to the controls. The PWA had reduced looks towards non-local antecedents in *kendisi* conditions (ß= -4.45, z= -2.92, p = 0.006) but not towards local ones.

Results from Experiment 2 showed that fixed effects for the PWA had reduced preference for discourse antecedents than non-local antecedents in both null and overt pronoun conditions as compared to the controls. The eye-movement data indicated that the PWA did not exhibit critical differences in null pronoun conditions compared to the controls in their looks to the non-local (ß = 0.28, z = -1.99, p = 0.06) and discourse antecedents (ß = 0.13, z = 0.93, p = 0.35). In overt pronouns, the PWA had reduced target looks towards non-local antecedents (ß = -0.29, z = -2.20, p = 0.03) but not towards the discourse antecedents (ß = -0.08, z = -0.70, p = 0.48).

Discussion

This study investigated two interesting pronominal phenomena in processing anaphoric processing in aphasia. Regarding the processing of reflexive forms, we showed that Turkish speaking PWA strongly consider a non-local interpretation for reflexives. With regard to null object pronoun conditions, the PWA had reduced preference for discourse antecedents without a critical difference between overt and null object pronouns. The PWA's eye movements did not differ from the controls in the null pronoun condition, while they had fewer looks towards non-local antecedents in overt pronoun conditions. Outcomes from this study point to a reverse picture to the theory that predicts reflexives to be spared in aphasia because reflexives refer to local antecedents. We suggest that PWA might consider an alternative interpretation during processing unconstrained reflexives. We further indicated that the Turkish PWA have a difficulty in their antecedent choice for discourse referents in their processing of object pronouns. This is consistent with the idea that processing discourse linked entities is harder in aphasia (see e.g., Avrutin, 2006).

References

Arslan, S., Devers, C., & Ferreiro, S. M. (2021). Pronoun processing in post-stroke aphasia: A meta-analytic review of individual data. *Journal of Neurolinguistics*, *59*, 101005.

Choy, J. J., & Thompson, C. K. (2010). Binding in agrammatic aphasia: Processing to comprehension. *Aphasiology*, *24*(5), 551-579.

de Roo, E. (2003). Null subject pronouns in Broca's speech production. *Aphasiology*, *17*(11), 1057-1072.

Gračanin-Yuksek, M., Lago, S., Şafak, D. F., Demir, O., & Kırkıcı, B. (2017). The interaction of contextual and syntactic information in the processing of Turkish anaphors. *Journal of psycholinguistic research*, *46*(6), 1397-1425.

Grodzinsky, Y., Wexler, K., Chien, Y.-C., Marakovitz, S., & Solomon, J. (1993). The breakdown of binding relations. *Brain and Language*, *45*(3), 396-422.

Mirman, D. (2017). *Growth curve analysis and visualization using R*. CRC press.

Peristeri, E., & Tsimpli, I. (2013). Pronoun processing in Broca's aphasia: Discourse–syntax effects in ambiguous anaphora resolution. *Aphasiology*, *27*(11), 1381-1407.

Figure 1. PWA and Control participants' end of sentence responses and eye-movement patterns in proportions