

## Background

**Ribot's Law, 1887:** language development is reversely mirrored in language loss.  
**Jakobson, 1941- Regression Hypothesis:** the order of dissolution is identical in the opposite direction to the order of language development.  
**Grodzinsky, 1990:** From more restrictive to more permissible grammar in acquisition, reverse development in language loss.  
**Kolk, 2001:** Regression in agrammatic speech to child language: both overusing ellipsis due to reduced processing capacity.  
**Penke, 2001:** No access to CP layer in child grammar but intact projection of CP layer in agrammatism.

## Aim

To test whether child language and agrammatism show similarities in terms of their comprehension patterns in Turkish relative clauses.

## Turkish

- Agglutinative SOV language with rich verbal morphology
- Head Final language with flexible word order
- Overt case marking on NPs and sentential complements

## Turkish Relative Clauses (RC)

- RC head is in the right-most head position
- There is no overt wh-element or complementizer
- DIK** = object relativizing morpheme & **-AN** = subject relativizing morpheme
- There is agreement morphology in object RCs whereas none in subject RCs
- In object RCs, the NP in the agent role should be marked with **genitive case** and the verb should agree with it via a **possessive marker** followed by an **agreement morphology**.

- (1) Kadın adam-ı sev-iyor. (The woman loves the man)  
woman man-ACC love-3sg
- (2) Kadın -in sev -dik -i adamı.  
woman -Gen love -Ob.Rel. -Poss.3sg man  
(The man whom the woman loves)
- (3) —i subj adam-ı sev -EN kadın. (The woman who loves the man)  
man-ACC love -Sub.Rel. woman

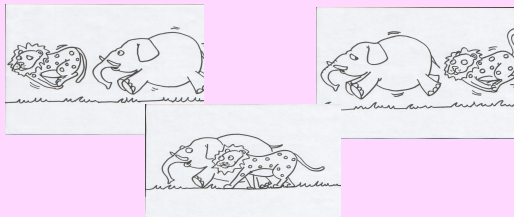
## Participants

- 11 people with **agrammatic** Broca's aphasia
- Left-frontal damage involving Broca's Area
- Diagnosed with effortful, non-fluent, and telegraphic speech
- At least three months onset prior to participation in this test
- Literate with minimum 5 years of education, all right-handed
- 15 **children** with normal development
- No disabilities
- All right-handed.
- All attending kindergarten
- Mean age: 43.66 (41-52 months)
- 8 Females and 7 Males

## Procedure and Stimuli

Participants were tested individually in a sentence-picture matching task and provided with oral instruction and some trials.

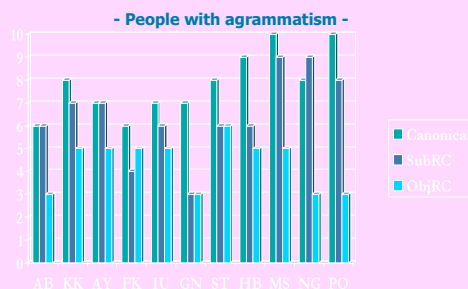
10 subject RCs, 10 object RCs, 10 simple SOV sentences were read in a random order and participants were asked to choose the picture correctly depicting each sentence.



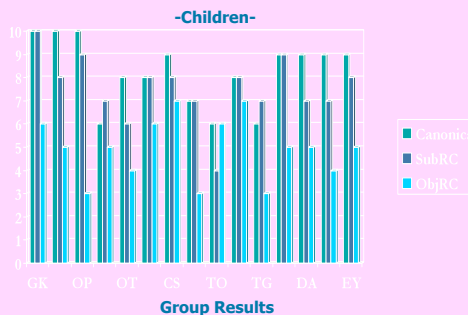
## Comprehension of Turkish relative clauses in children and adults with agrammatic aphasia

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## Individual Results: Number of correct responses



## Individual Results: Number of correct responses



## Group Results

Average number of correct answers			
Participants	Sentence Type		
	Canonical	SubRC	ObjRC
Broca's	7.81	6.45	4.36
Children	8.26	7.53	4.93

Percentages of Above Chance Performance			
Participants	Sentence Type		
	Canonical	SubRC	ObjRC
Broca's	81.81	72.2	27.3
Children	100	88.2	33.3

## What might be the cause of comprehension deficit?

- Trace Deletion Hypothesis (TDH), Grodzinsky (1986,2000)** : No access to syntactic chains in agrammatism

**The default strategy:** assign the agent role to the first NP without a theta-role.

In English TDH expects above chance performance in subject RCs and chance performance in object RCs. On the other hand Turkish, being a head-final language, should yield the opposite pattern. That is, the first NP in an object RC is already in the agent role, which should produce an above chance performance:

## Above chance performance in Object RCs

Adam-in öldür -dü -ğ -ü kadın.  
man-GEN kill-T -Ob.Rel.-POSS.3sg woman  
(AGENT) (PATIENT)

On the contrary, the first NP in a subject RC has the patient role in Turkish. The default strategy should fail when it assigns the agent role to the first NP here:

## Chance performance in Subject RCs

—i Adam-ı öldür -en kadın.  
man-ACC kill -Sub.Rel. woman  
(AGENT) (PATIENT)

**Yet, our data do NOT verify the predictions of TDH:** Most of the participants in this study consistently behaved like English-speaking people while TDH expected the opposite. That is, they performed at chance level in object RCs while having no problem in subject RCs.

- Filler-gap Hypothesis, O'Grady (1997):** Processing load increases in line with the distance between filler and the gap.

In Turkish, structural difference between the gap and the filler is longer in object RCs than subject RCs, which might be the reason for the particular deficit our participants presented in this study.

One node between the gap and the filler in Subject RC: [ —ı adam-ı sev-EN ] kadın,

Two nodes between the gap and the filler in Object RC: [ kadın-in [ —ı sev-DİĞİ ] ] adam,

- Limitations in the realization of Genitive case:** No/limited access to AGR associated with a functional category —ı or —D which checks Genitive case. In object RCs, the NP in the agent role is marked with genitive case, which might also be hindering correct comprehension of these structures.

- Deficit in Morphosyntax of Case and Agreement:** In object RCs the verb should have possessive marker followed by agreement morphology. The fact that participants are having problems in structures with genitive-possessive agreement might be why they perform at chance level in object RCs.

- Limited processing capacity:** Both children and people with agrammatism might be suffering from limited computational resources or limited short-term memory buffer, which might be preventing them from keeping the complex sentences in memory and leading them to come up with compensating strategies.

## What might be the Deficit Compensating Strategy?

If the Default Strategy TDH offers does not work for Turkish, what could be the strategy Turkish-speaking people apply in complex structures like relative clauses?

**Pre-verbal Strategy, Kükürt (Özge) 2004; Özge and Tekman, 2006:** assign the preverbal NP the patient role.

**Acc-Obj Strategy:** Assign the subject role to the NP with the accusative case.

## Concluding Remarks

It can be concluded that both normally developing children and adults with agrammatism have defective comprehension in object relative clauses. However, considering the limited scope of this study we refrain from speculating that both populations have this type of deficit due to one and the same reason. Also, we take it impossible to hypothesize that they use the same strategy although they behave quite similarly.

That is, the experimental test applied in this study cannot tell why the participants have problems in assigning theta-roles in object RCs. However, many theories can be suggested to account for this. Off-line data should be supported with real-time processing data to better explain the real nature of underlying deficit and the similarity between two groups of participants.

Moreover, in order to figure out whether the problem is resided in traces, morphosyntax, or memory problems comprehension of agreement morphology in simple structures with no transformations should be tested. (e.g. AGR in Genitive-possessive structures): Ali-nin ev -i "Ali's house"

Ali-Gen house -Poss.3sg

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