As complex as they appear: Children's comprehension of conjunctive expressions in Georgian

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Introduction

Background. Mitrović and Sauerland (2014, 2016) claim that languages share the same underlying structure for DP-conjunction:

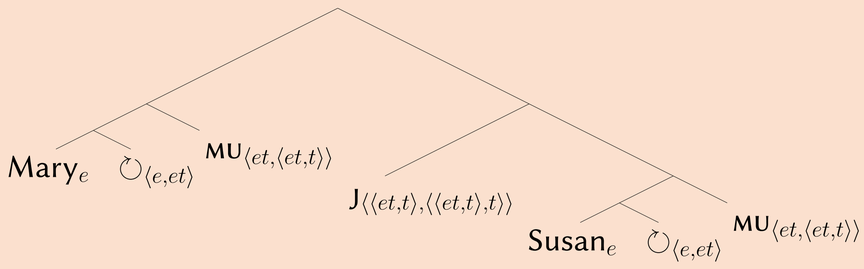


Fig. 1: Universal structure for DP-conjunction

Languages vary wrt. which of these particles they realize: some languages pronounce J (e.g., English *and*), whereas others pronounce MU (e.g., Japanese *mo mo*). Georgian shows triadic exponence of J and MU (Hewitt, 1995; Chutkerashvili, 2009):

(1) *Georgian conjunction patterns*

a. k'ovz-i **da** saban-i aris magida-ze. — J
spoon-NOM J blanket-NOM is table-on
'The spoon and the blanket are on the table.'

b. k'ovz-i(**-c**) saban-i **-c** aris magida-ze. — MU
spoon-NOM-MU blanket-NOM-MU is table-on
'The spoon and the blanket are on the table.'

c. k'ovz-i(**-c**) **da** saban-i **-c** aris magida-ze. — J-MU
spoon-NOM-MU J blanket-NOM-MU is table-on
'The spoon and the blanket are on the table.'

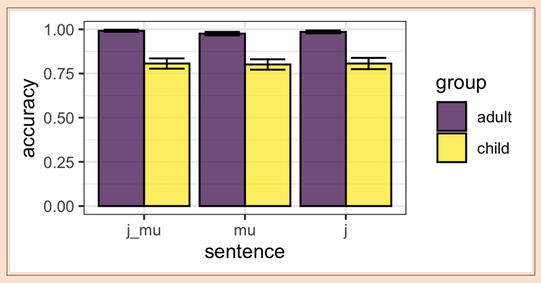
Goal. To test Mitrović and Sauerland's (2014; 2016) account by investigating the comprehension of conjunctive expressions by Georgian-speaking children.

- Preference from children for expressions that display more one-to-one mapping between form and meaning (Slobin, 1985; van Hout, 2008; Sauerland and Alexiadou, 2020; Guasti et al., 2022, a.o.).
- **Prediction:** Expressions where both J and MU particles are articulated (i.e., (1c)) should be easier for children to comprehend relative to expressions where one of these particles is silent (i.e., (1a) and (1b)).

Results

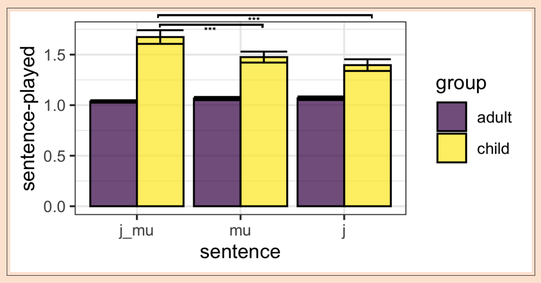
End-state accuracy. A mixed-effects logistic regression analysis revealed:

- A *group* effect ($\chi^2(1) = 12.27$, $p < 0.001$).
- No *sentence-type* effect ($\chi^2(2) = 2.24$, $p = 0.33$).
- No *interaction* effect ($\chi^2(2) = 1.95$, $p = 0.38$).



Sentence played n times. A mixed-effects linear regression analysis revealed:

- A *group* effect($\chi^2(1) = 36.82$, $p < 0.001$).
- A *sentence-type* effect ($\chi^2(2) = 12.71$, $p < 0.01$).
- An *interaction* effect ($\chi^2(2) = 20.52$, $p < 0.001$).



Main findings. Taking the *sentence played* variable as a measure of how easily sentences are understood by children, this study shows that:

① J-MU expressions are more difficult to comprehend than J expressions.
- Challenges the account by Mitrović and Sauerland (2014, 2016).
- In line with accounts like Brasoveanu and Szabolcsi (2013) and Szabolcsi (2015) in which the underlying representation of J expressions is less complex than the underlying representation of J-MU expressions.

② J-MU expressions are more difficult to comprehend than MU expressions.
- Challenges the account by Mitrović and Sauerland (2014, 2016).
- Challenges current accounts of J-MU expressions (Brasoveanu and Szabolcsi, 2013; Szabolcsi, 2015) which posit a silent J in MU expressions.

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Method

Participants. 31 Georgian-speaking children (3;9-5;10, M = 4;9) from daycare centers in Ozurgeti and 41 Georgian-speaking adults from Ilia State University.

Paradigm. Act out task: participants (i) were presented with one of the starting layouts in Fig. 2, (ii) pressed the dog face (one or more times) to play one of the pre-recorded conjunctive sentences in (1), and (iii) were instructed to change the scene to make the picture match the sentence.

Fig. 4: Various starting layouts for the sentences in (1)

18 experimental items: 6 J sentences, 6 MU sentences and 6 J-MU sentences

Discussion

Ruling out alternative explanations.

- Children may have been prompted to replay a sentence more times when that sentence is less frequently produced in the language generally.
  → In Georgian, MU expressions are the least commonly used conjunctive expressions.
  → Despite this, MU sentences were played to the same extent or less than the other sentences.
- Children may have been prompted to replay morphologically complex conjunctive expressions more often than the others.
  → MU expressions are morphologically more complex than J expressions.
  → Despite this, MU sentences were played to the same extent as J sentences.

A new account of conjunctive expressions in Georgian.

- J-particles map to logical conjunction and nominal conjunction is derived via conjunction reduction (cf. Winter 2001; Schein 2017).

(2) $[\![\text{J}]\!] = \lambda p.\lambda q.p \wedge q$

- We analyze MU as an additive expression. (3) shows that Georgian MU also has an additive use (Chutkerashvili, 2009).

(3) maria **-c** c'a-vid-a bazar-shi.
Maria.NOM-MU PREV-went-3SG.SUBJ market-in
'Also Maria went to the market.'

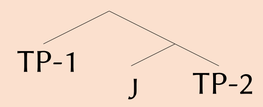
- Building on Ahn's (2015) work on *too*, we analyze Georgian MU as a 2-place predicate taking as arguments (i) the host proposition p it adjoins to, and (ii) q which is either a silent propositional anaphor (7) or the preceding proposition (6). It further presupposes that q must be a distinct focus alternative of the host proposition.

(4) $[\![\text{MU}]\!]([\![\text{p}]\!]_{\sim C}) = \lambda q : q \in C - \{[\![\text{p}]\!]^0\}.\ [\![\text{p}]\!] \wedge q$

- We propose that only the second occurrence of MU has the denotation in (4) – the first MU is semantically vacuous (i.e., MU-particles instantiate another instance of concord phenomena), capturing (1b) and (1c) where the first occurrence of MU is optional.

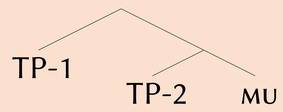
Deriving the 3 types of sentences:

(5) a. J sentences (1a):



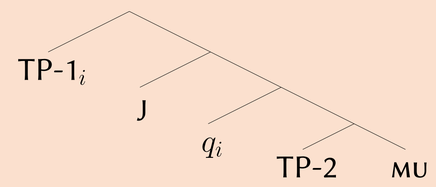
b. $[\![(1a)]\!]$ = the spoon is on the table $\wedge$ the blanket is on the table

(6) a. MU sentences (1b):



b. $[\![(1b)]\!]$ is defined only if $[\![$ the spoon is on the table$]\!] \in C$.
When defined,
$[\![(1b)]\!]$ = the spoon is on the table $\wedge$ the blanket is on the table

(7) a. J-MU sentences (1c):



b. $[\![(1c)]\!]$ is defined only if $q \in C$.
When defined,
$[\![(1c)]\!]$ = the spoon is on the table $\wedge$ ($q\wedge$ the blanket is on the table)

Because J-MU sentences are underlyingly more complex (i.e., involve more logical operators) than J sentences on the one hand and MU sentences on the other hand, the proposed account captures our results.