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:

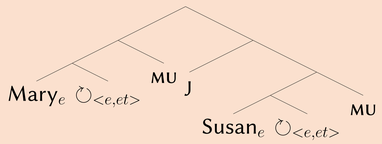


Fig. 1: Universal structure for DP-conjunction

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)).

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.

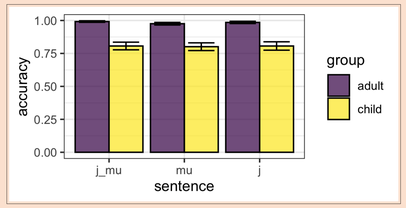
Fig. 2: Various starting layouts for the sentences in (1)

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

Results

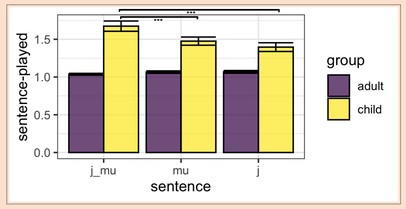
End-state accuracy. A mixed-effects logistic regression analysis revealed:

- 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); 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.

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 expression.
  → 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.

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Discussion

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.'

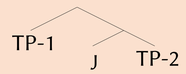
- Building on Ahn's (2015) work on *too*, we analyze Georgian MU as a 2-place predicate taking as arguments (i) the host proposition p it adjoins to, and (ii) q which is either a silent propositional anaphor (7) or the preceding proposition (6). It further presupposes that q must be a distinct focus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

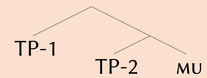
Deriving the 3 types of sentences:

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



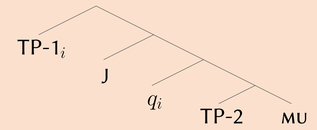
b. $[\![(1a)]\!]$ = the spoon is on the table $\wedge$ the blanket is on the table

(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.