Insights into the Acquisition of Simple and Complex Disjunction Markers in Romanian

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Introduction: The current paper investigates experimentally the interpretation of the morphologically simplex disjunction *sau* 'or' and the complex disjunctions *sau…sau* and *fie…fie* 'either…or' in child and adult Romanian (*Găina a împins trenul sau barca* 'The hen pushed the train or the boat'), a language where the acquisition of disjunction has not been previously studied. Importantly, Romanian includes multiple complex disjunctions: a complex disjunction which consists of a reduplication of the simple counterpart (*sau…sau* vs. *sau*, similar to *ka…ka* vs. *ka* in Japanese), and a complex disjunction, *fie…fie*, which lacks a simple counterpart (similar to *soit…soit* vs. *ou* in French). This makes Romanian an interesting test case for comparing multiple complex disjunctions within the same language, a comparison not targeted by previous studies which focused on simple vs. complex disjunction.[1,2] Across a variety of languages, it has been found that adults tend to interpret simple and complex disjunctions exclusively in most contexts (*The hen pushed only one, not both*), while children interpret both inclusively (*The hen pushed one and possibly both*) or conjunctively (*The hen pushed both*), rather than exclusively.[3-7] Our study explores whether such findings carry over to multiple types of disjunctions in Romanian.

Disjunction in Romanian: Our choice of disjunction markers was informed by a corpus study conducted on Romanian Web 2016. We opted to test *sau* 'or' and *sau…sau*, on grounds of frequency, and *fie…fie* given its lack of a simple counterpart. Romanian also employs two distinct prosodic patterns for *sau*: (i) a neutral prosody with no prosodic boundary after the first disjunct, and (ii) a marked prosody, where both disjuncts are stressed (as in complex disjunctions). Given that prosody may lead to interpretive differences,[8-11] we tested both marked *sau* and neutral *sau.*

Current experiment: Based on the results in [1], we tested the following null hypotheses: (1) [H0-1] Morphological complexity has no effect on children's interpretation of disjunction in Romanian, thus we expect no difference between simple and complex disjunctions; and (2) [H0-2] Prosodic complexity has no effect on children's interpretation of disjunction, thus we expect no difference between neutral *sau* and marked *sau*. We tested 52 Romanian-speaking children aged 4 to 6 years (*M*=5;4), and a control group of 115 adults in a between-subjects design targeting neutral *sau*, marked *sau*, *sau…sau*, and *fie…fie*. Following [1], we used a modified Truth Value Judgment Task presented in Prediction Mode rather than Description Mode[12] in order to license *ignorance inferences*, which often characterize disjunctive statements. Participants were introduced to a puppet, whose statements were pre-recorded (Fig.1). For each story, Bibi made a guess about what would happen. Participants then saw the outcome and had to say whether Bibi had guessed well.

Fig. 1. Example of an experimental item with neutral *sau* for the 2DT condition

SCENE 1: There once was a hen who loved to play with her toys, and she especially loved to push them around! One day her papa gave her two new toys: a train and a boat! The hen was very happy to play with them. Let's see if Bibi can guess what happened next!

SCENE 2: EXPERIMENTER: Bibi, tell us, what happened next?

BIBI: *Găina a împins trenul sau barca.*
'The hen pushed the train or the boat.'

EXPERIMENTER: Let's see if Bibi's right!

SCENE 3: (following animation of hen pushing both the train and the boat down the hill) Look, the hen pushed this and this! Did Bibi guess well?

Each participant saw a total of 15 sentences: 2 practice trials and 13 experimental items (8 targets, 2 controls, 3 fillers). Disjunctive test sentences (*The hen pushed the train or the boat*) were presented in 1-disjunct-true (1DT) contexts (x4) where only one disjunct was true (the hen pushed only the train), and 2-disjunct-true (2DT) contexts (x4) where both disjuncts were true (*The hen pushed both objects)*. Participants also received controls where neither disjunct was true.

Results (N= 47 children, 115 adults): Romanian adults generally interpreted both simple and complex disjunctions exclusively, accepting disjunctive statements in 1DT scenarios and rejecting them in 2DT scenarios (Fig. 2). In contrast, children tended to accept disjunctive statements in both 1DT and 2DT scenarios; for *fie…fie* however, they mostly rejected the disjunctive statements in 1DT scenarios, while accepting them in the 2DT scenarios (Fig. 3). We conducted a **group analysis**, comparing children and adults through a generalized mixed effects model with Group (Adults/Children) and Scenario (1DT/2DT) as fixed effects and Participant as a random effect. Group, Scenario and their interaction were significant: children gave *Yes* responses in the 2DT scenario more often than adults. Moreover, ANOVA analyses revealed significant effects of Disjunction type in both scenarios. In the 1DT scenario, the *fie…fie* condition showed the most notable contrast between children and adults. These findings were confirmed by an individual analysis of the number of *inclusive*, *conjunctive* and *exclusive participants* (see Table 1): children were mostly conjunctive on *fie…fie*, but inclusive on all other disjunctions.

Fig.2. Yes responses given by adults

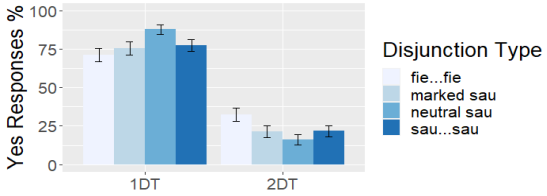

Fig.3. Yes responses given by children

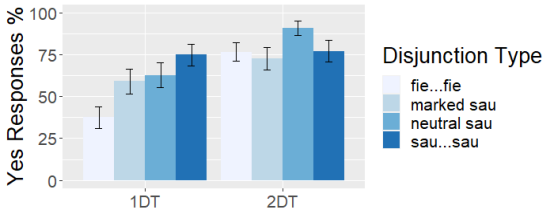

Table 1: Participants by Interpretation Type

Types	neutral *sau*	marked *sau*	*sau...sau*	*fie...fie*	Total
ADULTS					
Inclusive	7	3	6	4	20
Exclusive	14	20	23	21	78
Conjunctive	4	1	0	4	9
Mixed	2	3	2	1	8
CHILDREN					
Inclusive	6	5	5	2	18
Exclusive	0	0	1	2	3
Conjunctive	2	3	2	9	16
Mixed	3	3	2	2	10

Discussion: As predicted by H0-2, we found no difference between neutral and marked *sau*: both were interpreted inclusively. However, H0-1 was disconfirmed. While we expected no difference between *sau* and the complex disjunctions, children interpreted *fie…fie* conjunctively, unlike the other disjunctions. Our results differ from previous studies which found no difference between simple and complex disjunctions.[1,2] Romanian children's overall preference for inclusive interpretations of disjunction can be explained through their interpreting *sau…sau* logically, as 'or, possibly and' and their difficulty with deriving implicatures:[13,14] they fail to strengthen the disjunction via negation of the conjunctive alternative *The hen pushed the train and the boat.* Regarding *fie…fie*, we explore several possible explanations. A first possibility is that children never strengthen the meaning of disjunction, and interpret *fie…fie* semantically as a coordination, either by default (see [15]), or in virtue of the syncretism with the present subjunctive form of the verb *a fi* 'to be' (i.e. *să fie*); this would be in line with a one-to-one mapping between form and meaning[16], with children taking the sequence *fie A, fie B* to be the coordination of two subjunctives. The contrast between *sau…sau* and *fie…fie* could then be explained by assuming children draw on the high frequency of simplex *sau* in the input to associate it with inclusivity, subsequently overgeneralizing to *sau…sau.* Another possibility is that children do strengthen the meaning of disjunction, but unlike adults, who consider {A, B, A&B} as alternatives, they consider different alternatives for *sau* and *sau…sau* on the one hand ({A, B}), and *fie…fie* on the other ({only A, only B}) (see [12]). Finally, our results

cast doubt on proposals that conjunctive readings of disjunction are an experimental artefact,[17,18] given the different patterns we observed for the two complex disjunctions despite using the same experimental set-up for both. Our study contributes to a more fine-grained picture of disjunction, motivating further research into various disjunction types within and across languages.

References: [1] Tieu et al. 2017. [2] Sauerland & Yatsushiro 2018. [3] Braine & Rumain 1981. [4] Chierchia et al. 2001. [5] Gualmini et al. 2001. [6] Paris 1973. [7] Singh et al. 2016. [8] Armstrong 2014,2020. [9] Gotzner et al. 2013, 2016. [10] Meertens 2019. [11] Pruitt & Roelofsen 2013. [12] Singh et al. 2016. [13] Noveck 2001. [14] Papafragou & Musolino 2003. [15] Roeper 2011. [16] Slobin 1973. [17] Skordos et al. 2020. [18] Huang & Crain 2020.