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Not all complex disjunctions are alike: On inclusive and conjunctive interpretations in child Romanian

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Abstract

We investigate the interpretation of disjunction in child and adult Romanian via a replication of Tieu et al. (2017). Specifically, we target the simple disjunction *sau* ‘or’ (with two intonation patterns: neutral and marked), and the complex disjunction markers *sau...sau* and *fie...fie* ‘either...or’. In a predictive Truth Value Judgment Task, participants evaluated a puppet’s disjunctive guesses (*The hen pushed the bus or the plane*) after seeing the outcome. Adults assigned predominantly exclusive interpretations to both simple and complex disjunctions (*The hen pushed only one*). Children, however, generally interpreted *sau* (with both intonational patterns) and *sau...sau* inclusively (*The hen pushed one and possibly both*), while they interpreted *fie...fie* conjunctively (*The hen pushed both*). It would appear that at an initial developmental stage, morphological/prosodic markedness does not affect children’s interpretation of disjunction. We discuss several possible accounts for the observed variation among complex disjunctions in child Romanian.

Keywords: Romanian; child language acquisition; disjunction; inclusivity; exclusivity; conjunction; markedness

Introduction

The current paper describes an experimental investigation of the interpretation of the morphologically simplex disjunction *sau* ‘or’ (see (1)) and the complex disjunctions *sau...sau* and *fie...fie* ‘either...or’ (see (2)) in child and adult Romanian, a language where the acquisition of disjunction has not been previously studied.

(1) Simplex disjunction

Maria va cumpăra o rochie **sau** o pălărie.
‘Mary will buy a dress or a hat.’

(2) Complex disjunction

- Maria va cumpăra **sau** o rochie **sau** o pălărie.
- Maria va cumpăra **fie** o rochie **fie** o pălărie.
‘Mary will buy either a dress or a hat.’

In adult language, simple disjunctions like English *or* have been argued to allow for two possible interpretations (Grice, 1989): (i) an inclusive interpretation (*Mary will buy a dress or a hat and possibly both*), and (ii) an exclusive interpretation (*Mary will buy a dress or a hat, but not both*), the second being generally preferred by adult speakers. In contrast, complex disjunctions like English *either...or* have been argued to be obligatorily associated with an exclusive interpretation (Spector, 2014; Szabolcsi, 2015). Experimental work in this area has shown that adults tend to interpret even simplex disjunctions exclusively, but that, given the right experimental set-up, complex disjunctions do

tend to receive exclusive interpretations more often than simplex ones (e.g., Nicolae & Sauerland, 2016).

The association between complex disjunctions and exclusivity can be accounted for if one assumes Horn’s (1984) principle of pragmatic labor, according to which marked forms should have marked meanings. Previous theoretical and experimental studies have examined the comparison between simple and complex (i.e., morphologically marked) forms of disjunction. However, no study to date has compared multiple complex disjunctions within the same language.

Across languages, at least three types of complex disjunctions have been experimentally investigated (Sauerland & Yatsushiro, 2018; Tieu et al., 2017): a complex disjunction consisting of the morphological reduplication of the simple disjunctive marker (*ka...ka* vs. *ka* in Japanese, or French *ou...ou* vs. *ou*), a complex disjunction that is morphologically unrelated to the simple disjunction (French *soit...soit* vs. *ou*), and a complex disjunction consisting of two different morphemes (*either...or* in English, *entweder...oder* in German). Importantly, Romanian includes both a Japanese-style complex disjunction which repeats the simple counterpart (*sau...sau* vs. *sau*), and a French-style complex disjunction, *fie...fie*, which lacks a simple *fie* counterpart. This makes Romanian an interesting test case for the possible differences between the two types of complex disjunctions employing reduplication.

Regarding the interpretation of disjunction in child language, it has been observed that children seem to prefer inclusive readings of disjunction over exclusive ones (Braine & Romain, 1981; Chierchia et al., 2001; Gualmini et al., 2001; Paris, 1973), unlike adults who have the opposite preference. Thus, children tend to accept disjunctive statements in contexts such as (3), where both disjuncts (*Bunny painted a car*, *Bunny painted a truck*) are true, while adults tend to reject disjunctive statements in such contexts.

- (3) Context: *Bunny painted both a car and a truck.*
Sentence: *Bunny painted the car **or** the truck.*

The standard explanation is that adults compute an exclusivity implicature from the sentence in (3): when they hear the weaker alternative *or*, they are able to activate the stronger alternative *and*, and negate this alternative, generating the scalar implicature: *It is false that Bunny*

painted the car and the truck. One explanation for the difference between children and adults is that, unlike adults, children have difficulties deriving such scalar implicatures (Noveck, 2001; Papafragou & Musolino, 2003). Exclusivity implicatures could be harder for children due to immaturity of the mechanism involved in deriving strengthened interpretations, issues accessing the relevant conjunctive alternative (i.e., activating *and* when they hear *or*), or problems applying negation to this alternative (Barner, Brooks & Bale, 2011; Chierchia et al., 2001; Gualmini et al., 2001; Singh et al., 2016; Tieu et al., 2016, 2017).

In addition to the finding of fewer exclusive interpretations in children, it has also been reported that children often interpret disjunction conjunctively (Braine & Romain, 1981; Chierchia et al., 2004; Paris, 1973; Singh et al., 2016; Tieu et al., 2017), that is, while they accept disjunctive statements in contexts like (3), where both disjuncts are true, they reject them in situations where only one of the disjuncts is true.

Singh et al. (2016) reported such conjunctive behavior in English-speaking children; Tieu et al. (2017) replicated this finding for both simple and complex disjunction in French (*ou* vs. *soit...soit*) and Japanese (*ka* vs. *ka...ka*). Given the proposal that complex disjunctions may be obligatorily associated with strengthened (exclusive) interpretations (Spector, 2014), one might expect that children show greater access to exclusive interpretations of complex disjunctions compared to simple disjunctions. Yet Tieu et al. (2017) observed that, unlike adults, who were mostly exclusive across the board, French- and Japanese-speaking children were mostly split between inclusive and conjunctive interpretations, with no effect of disjunction complexity.

In a replication of Tieu et al. (2017) with German-speaking children, however, Sauerland & Yatsushiro (2018) observed that their child participants were mostly split between inclusive and exclusive responders, for both simple (*oder*) and complex (*entweder...oder*) forms of disjunctions. Strikingly, they observed hardly any conjunctive children.

Neither study reported a significant difference between simple and complex disjunctions.

Finally, it has been argued in some recent studies that the conjunctive interpretation is merely an experimental artifact rather than reflecting a genuinely licit interpretation on the part of children. Skordos et al. (2020) and Huang & Crain (2020) suggest in their respective studies that the conjunctive interpretation may more or less disappear when the use of disjunction is made felicitous, for example, when the contexts include three objects rather than two. However, like Tieu et al.'s (2017) target trials, Sauerland & Yatsushiro's (2018) German experiment involved only two pictured objects at a time, and no conjunctive interpretations were observed. It is thus unclear whether this explanation can account for the observed results across languages.

Given the mixed findings across languages, we turned to a language that has not yet been studied in this literature: Romanian, which moreover has multiple forms of complex disjunctions (Bilbîie, 2008). Re-using Tieu et al.'s (2017)

paradigm and materials but adapting them to Romanian enables us to compare the Romanian results with the data reported for French, Japanese, and German, thus sharpening the cross-linguistic landscape. Previewing the results, we will show that Romanian adults are predominantly exclusive in their interpretation of simple and complex disjunctions, while children are predominantly inclusive with all disjunctions except with *fie...fie*, which they interpret mostly conjunctively.

Current Study

Disjunction in Romanian

While Tieu et al. (2017) explored differences between simple and complex disjunctions, we are additionally interested in whether there are differences among complex disjunctive markers. Romanian provides an ideal test case for this investigation, given that it has multiple forms of complex disjunction (*sau...sau*, *fie...fie*, *ori...ori*).

The choice of which Romanian disjunction markers to test in our experiment was informed by a corpus study we conducted on Romanian Web 2016 (roTenTen16), the largest existing Romanian corpus that can be accessed online, containing 3,142,636,172 tokens. We observed that *sau* 'or' was the most frequent simple disjunction (raw frequency: 10,522,873 tokens), followed by *ori* (raw frequency: 677,502 tokens). *Sau...sau* was the most frequent complex disjunction (795,783 tokens), followed by *fie...fie* (178,419 tokens) and then by *ori...ori* (68,944 tokens).¹ Given their relatively greater frequency, we decided to test children on the simple disjunction *sau* and the complex disjunctions *sau...sau* and *fie...fie*. Note that *fie...fie* does not have a simplex counterpart (**A fie B*).

Additionally, Romanian also makes use of prosody to distinguish marked (stressed) *sau* from a more neutral *sau*. Prosody has been shown to have interpretive consequences in a variety of contexts: influencing alternatives in implicature-derivation (Fraundorf et al., 2010; Gotzner et al., 2013, 2016; Spalek et al., 2014), epistemic stances (Armstrong, 2014, 2020; Vanrell et al., 2017), and disjunctive questions (Meertens et al., 2019; Pruitt & Roelofsen, 2013). In the complex forms of disjunction in Romanian (*sau A sau B*; *fie A fie B*), both disjuncts are usually stressed. When it comes to simple disjunction in Romanian, however, we notice two distinct intonational patterns of *sau* which may lead to interpretive differences: (i) a neutral prosody with no prosodic boundary after the first disjunct (see (4a)), and (ii) a marked prosody, where both disjuncts are stressed (cf. the use of capitals in (4b)), and there is a prosodic boundary after the first disjunct (see https://osf.io/s35k9/?view_only=50e84fd58b36436cb8f9621ba3e75a84).

¹ The corpus search outputted both correlative disjunction with two disjuncts (*sau A sau B*) and non-correlative disjunction with three disjuncts (*A sau B sau C*). We are currently conducting a further study of the corpus with refined searches.

- (4) a. Maria a cumpărat mere **sau** pere.
 ‘Maria has bought apples or pears.’
 b. Maria a cumpărat MERE **sau** PERE.
 ‘Maria has bought APPLES or PEARS.’

Hypotheses

Given previous findings, we expect adults to be exclusive across the various disjunctive markers. As far as children are concerned, previous results from French and Japanese (Tieu et al., 2017), which contain disjunction types similar to Romanian, would lead us to expect very few exclusive children for either simple or complex disjunctions. Expectations are less clear, however, when it comes to potential differences among disjunctive operators.

Recall that Romanian has two types of complex disjunctions, *sau...sau* and *fie...fie*: *sau...sau* has a simplex counterpart, but *fie...fie* does not. Based on the results of Tieu et al. (2017), we put forth the null hypothesis in (5). We furthermore assume that if children are not sensitive to morphological complexity, they will not be sensitive to prosodic complexity either, leading to the hypothesis in (6).

(5) H0-1: Morphological complexity has no effect on children’s interpretation of disjunction in Romanian (i.e., no difference will be observed between simple and complex disjunctions).

(6) H0-2: Prosodic complexity has no effect on children’s interpretation of disjunction (i.e., no difference will be observed between neutral *sau* and marked *sau*).

Design

We employed a 4x2 design crossing Disjunction Type (neutral *sau*, marked *sau*, *sau...sau*, *fie...fie*, between subjects) and Scenario (1-disjunct-true ‘1DT’ vs. 2-disjunct-true ‘2DT’, within subjects). As in Tieu et al. (2017), the Scenario manipulation allowed us to determine whether a given participant interpreted the disjunction inclusively, exclusively, or conjunctively.

Participants

55 Romanian-speaking children aged 4 to 6 years (mean age: 5;4) participated in the experiment at a local preschool in Bucharest, Romania. Participants were distributed across the four different conditions: 12 neutral *sau*, 13 marked *sau*, 15 *sau...sau*, 15 *fie...fie*. 115 adult Romanian native speakers were recruited as controls (mean age: 20 years) and distributed as follows: 27 neutral *sau*, 27 marked *sau*, 31 *sau...sau*, 30 *fie...fie*.

Materials and procedure

Following Tieu et al. (2017), we employed a modified Truth Value Judgment Task (Crain & Thornton, 1998) in prediction mode, which took the form of a ‘guessing game’. Experimental items were translated from Tieu et al. (2017). Participants were introduced to a puppet named Bibi the Giraffe and were told that they would play a game with her

on the computer. Bibi’s statements were pre-recorded to create the illusion of a Zoom call with Bibi.

Each trial included three different scenes:

(i) Scene 1: participants see a picture and hear a short introduction about the character in the picture;

(ii) Scene 2: Bibi appears on screen to make a guess about what will happen next;

(iii) Scene 3: participants see what happened and have to say if the puppet’s earlier guess was correct or not.

Each participant saw 15 sentences in total: 2 practice trials (1 correct and 1 incorrect guess) and 13 experimental items (8 test items, 2 controls, 3 fillers). The Scenario manipulation consisted of presenting disjunctive statements like *The hen pushed the train or the boat* in 2 conditions:

(i) **1-disjunct-true (1DT)**, in which only one disjunct was true (*The hen pushed only the train*).

(ii) **2-disjunct-true (2DT)**, in which both disjuncts were true (*The hen pushed both the train and the boat*).

The second condition is exemplified in Figure 1 below.



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.*
 hen.DEF has pushed train.DEF or boat.DEF
 ‘The hen pushed the train or the boat.’

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

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

Figure 1: Sample experimental item (neutral *sau* in 2DT)

Participants also heard control statements in a **0-disjunct-true condition (0DT) (x2)**, where neither disjunct was true (*The hen pushed neither object*).

Analysis and results

We performed planned analyses both at the group and individual level. Data from 8 child participants was excluded from the analysis due to low accuracy (< 50%) on filler and control trials, leaving 47 children for analysis.

In our **group analysis**, we looked at the difference in responses between the 1DT and 2DT scenarios, as well as the differences across disjunctions (neutral *sau*, marked *sau*, *sau...sau*, *fie...fie*) in 1DT and 2DT scenarios.

To examine the differences between 1DT and 2DT scenarios, we ran a mixed effects logistic regression model with the rate of *Yes* (*Bibi guessed right*) responses as a dependent variable, Scenario (1DT/2DT) as a fixed effect, and Participant as a random effect. We also looked at the differences between disjunctions (neutral *sau*, marked *sau*, *sau...sau*, *fie...fie*) within each scenario type (1DT, 2DT) through a logistic regression model with Complexity (simple vs. complex disjunction) as a fixed effect and Participant as a random effect. Additionally, we ran ANOVA analyses to compare the percentage of *Yes* responses between the four different disjunction types.

Adults. Figure 2 displays the percentage of *Yes* responses given by adults in each Scenario (1DT, 2DT), for the four disjunction types. The model revealed a significant effect of Scenario for adults ($z = -14.72$, $p < 0.0001$): across disjunction types, there were fewer *Yes* responses in the 2DT condition compared to the 1DT condition.

Turning to Complexity, overall, adult speakers of Romanian treated simple and complex disjunctions alike ($p > 0.05$). However, ANOVA analyses revealed significant effects of Disjunction Type in both 1DT and 2DT scenarios. This effect is due to the contrast between simple *sau* and complex *sau...sau*. Post-hoc Tukey tests for pairwise comparisons revealed a significant difference between the neutral *sau* condition and the *sau...sau* condition in both 1DT ($p = 0.011$) and 2DT ($p = 0.016$) scenarios.

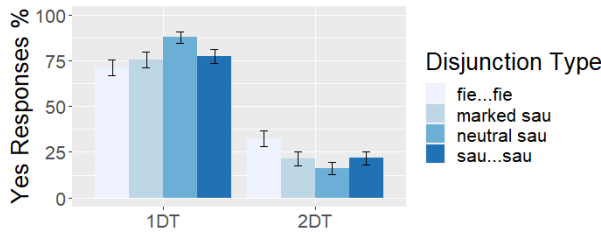


Figure 2: *Yes* responses given by adults.

Children. Figure 3 displays the percentage of *Yes* responses given by children in each Scenario (1DT, 2DT), for the four disjunction types. The model revealed a significant effect of Scenario for children ($z = 5.021$, $p < 0.01$): across disjunction types, children gave more *Yes* responses in the 2DT condition compared to the 1DT condition.

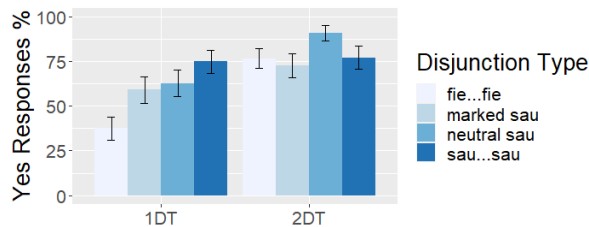


Figure 3: *Yes* responses given by children.

With respect to H0-1, we did not find a significant overall effect of disjunction complexity either in the 1DT or the

2DT scenarios. We did, however, find significant effects of disjunction type within the 1DT scenario. Post-hoc Tukey tests revealed significant contrasts between neutral *sau* and *fie...fie* ($p < .05$) and between *sau...sau* and *fie...fie* ($p < .01$) in the 1DT scenario. No other comparisons were significant.

Comparing children to adults. We compared children and adults through a mixed effects logistic regression model with Group (Adults/Children), Scenario (1DT/2DT), and their interaction as fixed effects and Participant as a random effect. We found that Group, Scenario, and their interaction were significant: children gave *Yes* responses in the 2DT scenario more often than adults. A similar model with Group, Complexity, and their interaction as fixed effects revealed no significant interaction between Group and Complexity in either the 1DT or 2DT scenario. ANOVAs with Group and Disjunction as fixed effects revealed a significant interaction between Group and Disjunction type in the 1DT scenario but not in the 2DT scenario. Post-hoc Tukey tests revealed a significant contrast between children and adults for *fie...fie* in the 1DT scenario.

Interpretation of disjunction. Following Tieu et al. (2017), we also analyzed the data at the individual level, to assess whether a given participant had interpreted the disjunctions exclusively, inclusively, or conjunctively. To do so, we used participants' pairs of responses to the 1DT and 2DT conditions and categorized the participants as inclusive, exclusive, or conjunctive responders. *Inclusive* participants were those who accepted more than half of the test sentences in both 1DT and 2DT scenarios, *exclusive* responders rejected more than half of the test sentences in the 2DT scenarios but accepted them in the 1DT scenarios, and *conjunctive* responders accepted more than half of the test sentences in the 2DT scenarios but rejected them in the 1DT scenarios. Table 1 displays the number of child and adult participants in each category.

Table 1: Participants by Interpretation Type per condition

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

Overall, we find that Romanian-speaking adults are mostly exclusive in their interpretation of disjunction. Nevertheless, there were adults who interpreted the disjunction inclusively. In contrast, children were mostly inclusive across all disjunction types, and very few children were exclusive. The sole exception to this pattern was *fie...fie*, which most children interpreted conjunctively.

Discussion

Main findings

The results for adults are in line with the expectations raised by previous studies: Romanian adults generally interpreted both simple and complex disjunctions exclusively, accepting disjunctive statements in 1DT scenarios and rejecting them in 2DT scenarios. Interestingly, we observed a slight difference in interpretation between neutral *sau* and *sau...sau*, which may be taken to indicate a possible effect of Horn's (1984) markedness hypothesis manifesting at the morphological level. The absence of a contrast between neutral *sau* and *fie...fie*, however, casts doubt on an explanation cast purely in terms of morphological complexity.² Instead, what might explain the difference in behavior between the two complex disjunctions *sau...sau* and *fie...fie* is the fact that *sau...sau* has a simple *sau* counterpart, whereas *fie...fie* lacks a simple *fie* counterpart. The difference between neutral *sau* and *sau...sau* could thus be accounted for within a *competition-based framework*, where the contrast between the two forms (one *sau*, two *sau*-s) enhances their differences in interpretation.³

Turning to children, we observed a difference between neutral *sau*, marked *sau*, and *sau...sau* on the one hand, and *fie...fie* on the other hand. For the former, children tended to accept disjunctive statements in both 1DT and 2DT scenarios; for *fie...fie*, however, children mostly rejected the disjunctive statements in 1DT scenarios, while accepting them in 2DT scenarios. The individual-level analysis further confirmed that children tended to interpret *fie...fie* conjunctively and the other markers inclusively.

With respect to our hypotheses, as predicted by H0-2, we found no difference in interpretation between neutral and marked *sau*. This may be somewhat surprising given that children have been shown to associate different prosodic patterns with distinct meanings (see studies by Armstrong, 2012, 2014; Vanrell et al., 2020, among others).

In contrast, H0-1 was disconfirmed. The null hypothesis predicted no difference in interpretation between *sau* and any of the complex disjunctions (*sau...sau*, *fie...fie*). While we did not find any difference between *sau* and *sau...sau*, which were both interpreted inclusively, children appeared to interpret the complex disjunction *fie...fie* conjunctively.

Comparison with previous findings

Our results differ from those of Tieu et al. (2017), who found no difference between simple and complex disjunctions (whether the complex disjunction involved

morphological reduplication of the simple form or not). A further difference lies in the type of interpretation obtained: setting aside *fie...fie*, almost all children in our experiment had an inclusive profile, while in Tieu et al.'s experiments, half the children had an inclusive profile and half a conjunctive one, regardless of the disjunction marker. Our results also differ from the German study by Sauerland & Yatsushiro (2018), who found a split between inclusive and exclusive responders. The difference between German and Romanian is perhaps less surprising given that Romanian lacks a complex disjunction of the German type, which consists of entirely different morphemes (*entweder...oder*).

Setting aside *fie...fie* for now, Romanian children's preference for inclusive interpretations of disjunction can be seen as an instantiation of their difficulty with deriving implicatures, in this case the exclusivity implicature (e.g., Bleotu, 2021; Bleotu, Benz & Gotzner, 2021; Noveck, 2001; Stoicescu et al., 2015). Specifically, we assume that children interpret *sau...sau* logically, as 'or, possibly and'; this could be because they lack the required pragmatic resources to generate the inference negating the stronger conjunctive alternative *The hen pushed the train and the boat* (Pouscoulous et al., 2007), because they cannot associate the lexical entry of disjunction with the *<and, or>* scale (Reinhart, 2004, 2006; Guasti et al., 2005), or because they are more pragmatically tolerant of underinformative statements than adults (Katsos & Bishop, 2011).

Possible accounts for the interpretation of *fie...fie*

We turn next to *fie...fie* and its conjunctive interpretation in child Romanian. We consider several possibilities.

The first possibility is that *fie...fie*, along with the other disjunctive markers, is by default semantically interpreted as conjunction. The idea of a default conjunctive interpretation finds empirical support in child language studies of various structures, including recursive ones (Bleotu & Roeper, 2021a, 2021b; Matthei, 1982; Roeper, 2011).⁴ Nevertheless, such an account leaves the contrast between *sau...sau* and *fie...fie* unexplained in the absence of additional assumptions: if conjunction is the default interpretation of all disjunction markers, then *sau* and *sau...sau* (and all the other disjunctions) should pattern alike. To account for this contrast, we would need to further assume that children can draw on the relatively high frequency of simplex *sau* in the input to associate it with an inclusive interpretation earlier on than for *fie...fie*. A possible explanation for why children associate *sau...sau* with the same meaning as *sau* could then rely on the notion of *overgeneralization* (Gershkoff-Stowe et al., 2006): children might subsequently extend the inclusivity of *sau* to *sau...sau*.

A second possibility is that children interpret *fie...fie* in a conjunctive manner due to the *morphological syncretism*

² An anonymous reviewer suggests that the results for *sau*, *sau...sau*, and *fie...fie* could still be interpreted as supporting Horn's (1984) markedness hypothesis if *fie...fie* is represented as syntactically simple (given its lack of a simple counterpart).

³ Recall, however, that disjunction type was run between subjects, so this competition effect would exist more generally in Romanian, rather than being specific to our experimental design. Note also that this would not be able to explain the Japanese results, where no difference was observed between *ka* and *ka...ka*.

⁴ However, evidence against children initially treating disjunction as conjunction can be found in cross-linguistic studies of children's understanding of disjunction in downward-entailing environments (Crain 2008). Thus, the claim that children initially treat *all* connectives as conjunctions might be too strong.

between *fie*₁, a component of the complex disjunction *fie...fie*, and *fie*₂, a present subjunctive form of the verb *a fi* ‘to be’, which is used in Romanian together with the subjunctive marker *să*, to express desire for something to exist (see (7a)). Interestingly, in concessive contexts such as those in (7b), the subjunctive marker *să* can be dropped without a drastic loss of meaning.

- (7) a. *Să fie lumină!*
MRK.SUBJV be.PRS.SBJV.3 light
‘Let there be light.’
b. (*Să*) *fie soare, (să)*
MRK.SUBJV be.PRS.SBJV.3 sun MRK.SUBJV
fie ploaie, noi vom ieși.
be.PRS.SBJV.3 rain we will go-out
‘(Be it) Rain or shine, we will go out for a walk.’

In most contexts, however, *fie...fie* and *să fie...să fie* are not interchangeable. If children assume a one-to-one mapping between form and meaning (Slobin, 1973), children might start off thinking that the disjunctive marker *fie* has the same meaning as the subjunctive form *fie*, especially in a context lacking *să*. The sequence *fie A, fie B* may thus be interpreted as the coordination of two subjunctives. Such an account is supported by the syncretism between the disjunctive marker under discussion and the subjunctive form of an existential verb in other languages as well, not just in Romanian. Conjunctive interpretations have also been reported for *soit...soit* in French, where *soit* similarly corresponds to the 3rd person subjunctive form of the verb *être* ‘to be’.

The first two accounts thus assume that, unlike adults, children do not strengthen disjunction meaning, but, instead, they understand (some) disjunction(s) as conjunction.

A third possibility is that children also strengthen the meaning of the disjunction but, for some disjunctions, this strengthening leads to a conjunctive meaning (Singh et al., 2016) while for others the strengthening is vacuous, amounting to an inclusive meaning. As previously argued (Chierchia, 2006; Fox, 2007; Gazdar, 1979; Horn, 1972; Nicolae & Sauerland, 2020), computing the implicature of a sentence *S* involves two steps: (1) generating a set of alternative sentences to *S*, and (2) strengthening the meaning of *S* by negating the stronger alternatives and conjoining the result with *S*. Children may behave differently from adults at either step of the computation. One possibility is that, like adults, children can perform the strengthening step, but unlike adults, they have difficulty accessing the relevant alternatives (cf. Barner et al., 2011; Chierchia et al., 2001; Foppolo et al., 2012; Tieu et al., 2016; Singh et al., 2016; Skordos & Papafragou, 2016). For adults, the relevant alternatives to a disjunction include the individual disjuncts and the conjunction (see Table 2).

Table 2: Alternatives Considered by Children and Adults.

	Children	Adults
ALT((sau) A sau B)	{A, B}	{A, B, A and B}
ALT(fie A fie B)	{only A, only B}	{A, B, A and B}

According to Singh et al. (2016), children differ from adults in terms of the alternatives they consider; in particular, (i) children may lack the conjunctive alternative altogether. Moreover, to explain the difference between *fie...fie* and the other disjunctive markers in Romanian, we might hypothesize that (ii) children consider different alternatives for *sau* and *sau...sau* on the one hand, and *fie...fie* on the other. (i) accounts for why virtually none of the children in our experiment had an exclusive profile. Turning to (ii), it may be that *sau* and *sau...sau* have the individual disjuncts as alternatives, while *fie...fie* has the enriched/pre-strengthened individual disjuncts (see Table 2).

Observe that negating the simple disjunct alternatives will lead to a contradiction: **A or B and (not A) and (not B)*. Following Fox (2007) and subsequent literature, we can assume that no strengthening can occur if it leads to a contradiction, thus explaining why the interpretation of both *sau* and *sau...sau* disjunctions remains inclusive. Turning to *fie...fie*, the negation of the two alternatives leads to a conjunctive interpretation, since *A or B but (not only A) and (not only B)* is equivalent to *both A and B*, thus accounting for the observed interpretation for *fie...fie*.

Another possibility raised by Skordos et al. (2020) and Huang & Crain (2020) is that conjunctive readings of disjunction are an experimental artifact. If children take the disjunctive statements to be answers to questions such as *What did the hen push?*, and if the disjunctive sentence mentions all objects present in the visual domain, a conjunctive interpretation of disjunction would provide a complete and more informative answer. Such an interpretation is reduced by adding a third unmentioned object in the visual display. Importantly, in our experiment, all disjunctive statements mentioned both pictured objects, yet children were conjunctive only with *fie...fie*, not with the other disjunction markers. This casts doubt on a cognitive, task-related account of conjunctive interpretations of disjunctions. In future studies, we aim to take up this potential experimental confound by investigating these disjunctions in contexts with more than two salient objects.

Conclusion

We set out to investigate Romanian-speaking adults’ and children’s interpretation of three types of disjunction markers. The results indicate that Romanian 5-year-olds interpret disjunction differently from adults, who tend to interpret all three disjunctions exclusively. Romanian children are mostly inclusive with the neutral simple disjunction *sau*, the phonologically marked *sau* and the morphologically marked complex disjunction *sau...sau*. In contrast, they predominantly interpret the complex disjunction *fie...fie* as conjunctive. The contrast between the complex disjunctions *sau...sau* and *fie...fie* in child Romanian poses interesting questions in light of the absence of any such difference in adult language and motivates further research into the fine-grained differences among disjunction types within and across languages.

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