Agreement with singular disjuncts in adult and child language: A grammatical lacuna or a meaning-driven process?

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Previous studies on agreement with disjunction [1-3] show variable singular/plural agreement with disjunction when both disjuncts are singular, e.g., in (1). This variability in agreement may reflect a universal grammatical gap, with the absence of a universal rule for agreement with singular disjuncts leading to different strategies across languages and speakers. No research to date has investigated how agreement with singular disjuncts works in child language.

(1) a. Lulu: Iepuraşul sau castorul **miroase** floarea.
'The bunny or the beaver is smelling the flower.'
b. Bibi: Iepuraşul sau castorul **miros** floarea.
'The bunny or the beaver are smelling the flower.'

In the present study, we experimentally investigate both the production and comprehension of sentences like (1) in child and adult Romanian, in order to uncover the strategies employed by child and adult speakers, and to shed light on theoretical accounts of the phenomenon.

Background: According to the Closest Conjunct Agreement rule [1], claimed to be at work in agreement with disjunction (see [2,4]) and adopted by prescriptive grammars, agreement should always be in the singular when both disjuncts are singular [5]. According to semantic-pragmatic approaches [6,7], speakers should associate an inclusive meaning for disjunction (*A or B, possibly (A&B)*) with plural agreement, while associating an exclusive interpretation (*A or B, not (A&B)*) with singular agreement. This seems to be confirmed by acceptability judgment studies in Greek [6]. According to [8], however, agreement with singular disjuncts is a grammatical lacuna, in the sense that there is no grammatical prescription for agreement; they predict instead random singular/plural agreement. According to [9], variable agreement results from agreeing either with the singular number of the individual disjuncts or with the disjunction as a "plural" whole (denoting a set of alternatives, as opposed to a set of entities, which would be denoted by *conjunction*).

Current study: We extended the previous investigation of utterances where both disjuncts are singular to disjunctive utterances containing *sau* 'or' in child and adult Romanian, asking what kind of agreement adults and children produce and how they understand such utterances. We conducted a production (forced choice) experiment and a comprehension experiment, focusing on the mapping between disjunctive descriptions employing singular/plural agreement, and pictured outcomes.

Exp.1 (Production): 21 Romanian monolingual children (4;11-5;11, M=5;02) and 32 Romanian adults saw a picture (Table 1), then heard two puppets (who could not see the picture) make a guess about what would happen (1); they then had to decide which of the two puppets had guessed better. The task employed a 2x2 design, crossing *picture type* (1DT vs. 2DT, i.e. 1-disjunct-true vs. 2-disjunct-true) and *agreement type* (singular vs. plural). In addition to 4 non-disjunctive and non-agreement-oriented practice items, the task included 24 items presented in 2 pseudo-randomized lists (so that no participant saw both 1DT and 2DT pictures for the same pair of utterances). There were 8 pairs of utterances containing singular and plural agreement with disjunction, and 16 filler items containing singular and plural agreement

Table 1: Picture type

1DT	2DT
	

with singular and plural nouns. If participants were sensitive to agreement type, we expected more selection of the singular guess for 1DT pictures and the plural guess for 2DT pictures). A *glmer* analysis with rate of agreement-picture match as a dependent variable (SG for 1DT / PL for 2DT), Group, Picture and their interaction as fixed effects and random effects for Participant and Item revealed significant effects of Group and Picture. An individual analysis (Table 2) shows that adults split into 4 distinct subgroups: (i) an agreement-picture match subgroup, using plural for 2DT and singular for 1DT, (ii) an always singular subgroup, selecting singular regardless of the picture, (iii) an always plural subgroup, selecting plural regardless of picture. In contrast, most children consistently preferred to match the agreement to the picture, i.e., they selected plural for 2DT and singular for 1DT. Our findings suggest that children start out with an agreement system sensitive to whether the outcome of a guess is 1DT/2DT, but only a subgroup of adults behaves in a similar way. Instead, most adults appear to apply a syntactic rule (using singular as the default, or plural).

Table 2: Participant types in Production

Group	Agreement Matches Picture	Always singular	Always plural	Mixed
Adults	7	12	6	7
Children	19	0	0	2

Exp.2 (Comprehension): 25 Romanian monolingual children (4;11-5;11, M=5;03) and 36 Romanian adults heard a disjunctive utterance containing singular/plural agreement (see (1)), saw two possible outcomes, and then had to say which of the two pictures matched the guess better (Table 1). Again, the task employed a 2x2 design, crossing *picture type* (1DT vs. 2DT) and *agreement type* (singular vs. plural). The task included 24 items, distributed across 2 lists (so that no participant saw both singular and plural agreement utterances for the same picture). There were 8 test items and 16 fillers. A *glmer* analysis with accuracy as a dependent variable (1DT for SG, 2DT for PL) and Group, Agreement, and their interaction as fixed effects and random Participant and Item effects revealed significant effects of Group, Agreement, and their interaction. An individual analysis (Table 3) shows that most adults preferred to associate any disjunctive utterance with a 1DT picture, though some participants consistently selected the 2DT picture, and some varied their picture choice depending on agreement type. In contrast, most children answered randomly, which is in line with an inclusive interpretation of the disjunction. Since inclusivity is compatible with both 1DT and 2DT pictures, either one would be a good choice for an inclusive participant. Another response pattern for children involved variation of picture choice with agreement type.

Table 3: Participant types in Comprehension

Group	Picture Matches Agreement	Always 1DT	Always 2DT	Mixed
Adults	6	19	8	3
Children	8	2	2	13

Discussion: In production, while almost all children were sensitive to the number of disjuncts verified in the picture, adults could be grouped according to distinct agreement strategies (Table 4). Regardless of the picture type, some adult speakers valued disjunction (DisjP) as singular, some as plural, some as singular or plural, while, similarly to all children, some adults valued it as singular if the outcome was 1DT and as plural if the outcome was 2DT (for these participants, valuation depended on interpretation of the disjunction). In comprehension, most adults preferred to associate both singular and plural utterances with a 1DT picture, while children were more mixed in their answers or showed sensitivity to the agreement cue. Our results suggest that agreement with disjunction develops from a system that involves matching agreement to the number of verified disjuncts, to one that relies more on default/prescriptive agreement (singular) or optional

Table 4: Possible grammars for agreement with disjunction

Singular	**Plural**	**Random**	**Agreement-Picture Match**
DisjP [+sg] A Disj' Disj^0 B	DisjP [+pl]] A Disj' Disj^0 B	DisjP [Ø] A Disj' Disj^0 B	DisjP [+sg/+pl] A Disj' Disj^0 B [+sg] if 1DT, [+pl] if 2DT

agreement (plural) rules. However, it is important to note the existence of adult participants who were sensitive to the number of verified disjuncts in both comprehension and production. Our results are thus in line both with semantic-pragmatic approaches and with non-semantic approaches. Importantly, adults tend to be consistent in their choices, which, we believe, suggests the existence of multiple grammars rather than the absence of grammatical rules for disjunctive agreement altogether. Given similar findings in other languages (English, French, Italian, German, etc.), such agreement gaps may ultimately reflect a universal rather than language-specific phenomenon.

References [1] Nevins, A. & Weisser, P., 2018. *Annual Review of Linguistics*. [2] Haskell, T. R. & MacDonald, M. C., 2005. *Journal of Experimental Psychology*. [3] An, A. & Abeillé, A., 2021. *Langages*. [4] Keung, L.-C. & Staub, A., 2018. *JML*. [5] Zwicky, A., 2009. Agreement with disjunctive subjects [*Language Log*]. [6] Flouraki, M. & Kazana, D., 2009. *Proceedings of LFG09*. [7] Ivlieva, N., 2012, *Logic, Language and Meaning*. [8] Foppolo, F. & Staub, A., 2020. *Cognition*. [9] Himmelreich, A. & Hartmann, K., 2023. *Glossa*.