

A nonce investigation of a possible conjunctive default for disjunction

The current paper addresses the question of whether there is a conjunctive default in the interpretation of disjunction by probing into Romanian children's and adults' understanding of nonce functional words. Previewing the results, we find that, when exposed for the first time to sequences of words containing nonce connectives such as *A mo B* or *mo A mo B*, potentially corresponding to '(both) A and B' / '(either) A or B' / 'A not B' / 'neither A nor B', participants tend to associate them with a conjunctive interpretation rather than a disjunctive or negative one. Our findings suggest that a possible reason why children have been reported to interpret disjunction as conjunction in some previous studies may be the existence of a conjunctive default in the interpretation of operators linking A and B. Our findings also raise deeper questions about why speakers default to one interpretation over another, what the set of logical primitives is, and the possible role of frequency in shaping children's hypothesized meanings for logical connectives.

Background on the interpretation of disjunction Adults interpret simplex disjunction (e.g., *or*) *inclusively* (*The hen pushed one, possibly both*) or *exclusively* (*The hen pushed one but not both*), while they tend to associate complex disjunction (e.g., *either...or*) with exclusive interpretations [1,2]. In contrast, children, treat simplex and complex disjunctions alike, showing *inclusive, conjunctive* (*The hen pushed both*) or *exclusive* behavior: French and Japanese children are reportedly *inclusive* and *conjunctive* [3], while German children are *inclusive* or *exclusive* [4].

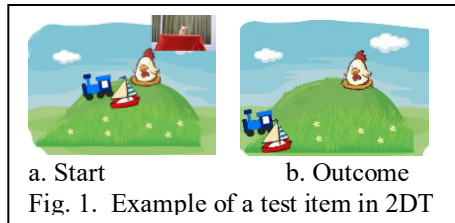
Disjunction in child Romanian Recently, this line of investigation has been extended to Romanian, which makes common use of multiple forms of disjunctions: the complex disjunction (i) *sau...sau* which is built off the simplex *sau*, and (ii) *fie...fie*, which lacks a simplex disjunctive counterpart, as well as two distinct prosodic patterns for *sau*: (iii) a neutral *sau* with no prosodic boundary after the first disjunct, and (iv) a marked *sau*, where both disjuncts are stressed. In two studies by [5], based on the design in [3], Romanian 5-year-olds were shown to be inclusive with all *sau*-based disjunctions, but conjunctive or inclusive with *fie...fie*.

The source of conjunctive interpretations in child language While children's inclusivity is typically explained as a logical interpretation of disjunction, the conjunctive interpretation of disjunction has been a matter of debate. [6,7] argue that it is merely an experimental artifact, which arises when the visual display (discourse context) only contains the objects in the disjunctive utterances. In this context, disjunction would not be informative, which is why children default to conjunction. However, [5] have shown that conjunctive behavior persists even when the background contains additional objects, casting doubt on this explanation. Alternatively, children's conjunctive interpretation is a genuine semantic-pragmatic interpretation, which may originate as a default [8], as an implicature [9], or as an additional meaning of disjunction alongside inclusivity [4]. We here focus on the conjunctive default hypothesis, probing into whether, when exposed to a connective operator unknown to them, participants default to conjunction.

Nonce words paradigms We employ a nonce paradigm. Nonce words have been employed in linguistics studies from as early as the 1950s, to probe into children's ability to learn the meanings of words by drawing on syntactic cues, also known as *syntactic bootstrapping* [10]. Brown (1957) showed experimentally that preschool-aged children could use their knowledge of different parts of speech to distinguish the meanings of nonsense words in English (*Do you see any/ a sib?*, *What is sibbing?*). Gleason's (1958) Wug Test used nonce words to explore children's acquisition of plural morphology (*one wug-two wugs*), possessives (*wug's, wugs'*) and verbal morphology (*He zibs*). Interesting experimental work has since ensued ([11-19], a.o.), introducing further paradigms such as the *Human Simulation Paradigm* [20], testing whether adults can infer meaning from context, and *Artificial Language Learning Paradigms* [21,22,23], testing whether adults and children can learn artificial words and what their biases are. These paradigms have been recently employed to probe into logical words such as modals [24] and negation [23].

Current experiments In our investigation, we look at what kinds of meanings adults and children ascribe to a nonce word linking A and B by using the materials in [3], originally designed to test children's interpretation of simple and complex disjunctions. We tested 21 adult native speakers

of Romanian and 17 monolingual children (3;06—5;11) on their interpretation of the nonce words *mo* and *mo...mo*. The same participants took part in the *Mo* Experiment first and the *Mo...mo* Experiment after 1 week. Following [3], we used a modified TVJT presented in Prediction rather than Description Model [9] to license *ignorance inferences*, which characterize disjunctive statements. Participants were introduced to a puppet, Bibi, who made guesses about various situations. They were told that Bibi would sometimes make use of an unknown word, and they had to decide what it meant for Bibi. Importantly, they were told that the unknown word did not refer to something that one could point to, so as not to give it a lexical meaning. Bibi would be familiarized with an animal and two objects (see Fig. 1a) and would then make a guess about what would happen (*The hen pushed the train mo the boat/ The hen pushed mo the train mo the*



boat). Participants then saw the outcome (Fig. 1b) and had to say whether Bibi had guessed well. At the end of the experiment, participants were asked what they thought *mo/ mo...mo* meant. Each participant saw 15 sentences: 2 practice trials and 13 experimental items (8 targets, 2 controls, 3 fillers). *Mo/ Mo...mo* test sentences (*Găina a împins (mo) trenul mo barca* ‘The hen pushed the train mo 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*). We also included false controls in which neither disjunct was true.

Results One adult participant was excluded for failing the fillers. Like adults, children were overwhelmingly conjunctive in their interpretation of utterances containing *mo* and *mo...mo...* (i.e. accepting 2DT targets and rejecting 1DT targets). In the *Mo* Experiment, 13/20 adults and 12/17 children were conjunctive, while in the *Mo...mo...* Experiment, 16/20 adults and 16/17 children were conjunctive. The remainder either opted for a negative interpretation (‘A not B’ or ‘neither A nor B’) or oscillated between a conjunctive and a negative interpretation (Table 1).

| Group | Interpretation | <i>Mo</i> | <i>Mo...mo</i> |
|------------------|----------------|-----------|----------------|
| Children (N= 17) | Conjunctive | 12 | 16 |
| | Negative | 1 | 0 |
| | Mixed | 4 | 1 |
| Adults (N= 20) | Conjunctive | 13 | 16 |
| | Negative | 2 | 2 |
| | Mixed | 5 | 2 |

The remainder either opted for a negative interpretation (‘A not B’ or ‘neither A nor B’) or oscillated between a conjunctive and a negative interpretation (Table 1).

Discussion Our results suggest that when participants are exposed to nonce words connecting A and B, they default to a conjunctive meaning. Even more strikingly, they seem to default to conjunction even in an experimental set-up where Bibi does not always make correct guesses. These findings can be interpreted in multiple ways. Under a *frequency approach*, it could be argued that participants simply associate the unknown connectors with the interpretation corresponding to the most frequent logical operator linking two elements, namely, conjunction (see [25] for a discussion of corpus evidence that conjunction is more frequent than disjunction). Under a *logical universal primitives approach*, it could be argued that conjunction is more basic than disjunction, since disjunctive interpretations can be reduced to the conjunction of two modalized elements [26]: *possible A* and *possible B*. Conjunction would also have the advantage of conceptual simplicity: (A and B) is simpler than (*possible A* and *possible B*). It is difficult to distinguish between these two approaches, given that frequency may also be a consequence of this bias. Concerning children’s interpretation of disjunction, our findings suggest that a conjunctive default could be a possible source for children’s interpretation of *fie...fie* as conjunctive, especially if *fie...fie* is less frequent [5], and consequently less familiar for children.

References [1] Spector 2014, [2] Nicolae & Sauerland 2016, [3] Tieu et al. 2017, [4] Sauerland & Yatsushiro 2018, [5] Bleotu et al. 2023a, b, [6] Skordos et al. 2020, [7] Huang & Crain 2020, [8] Roper 2011, [9] Singh et al. 2016, [10] Gleitman 1990, [11] Naigles 1990, [12] Soja 1992, [13] Höhle et al. 2004, [14] Christophe et al. 2008, [15] Syrett et al. 2010, [16] Yuan & Fisher 2012, [17] Jin & Fisher 2014, [18] Cao & Lewis 2021, [19] Huang et al. 2021, [20] Gillette et al. 1999, [21] Culbertson & Schuler 2019, [22] Maldonado & Culbertson 2021a, [23] Maldonado & Culbertson 2021b, [24] Dieueleveut et al. 2022, [25] Jasbi et al. 2018, [26] Zimmerman 2000