# Interdiction as a primary reading of negated deontic necessity in child Romanian

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We investigate the interaction between negation and deontic necessity in child Romanian by looking at unambiguous forms such as *nu e nevoie să* 'not is need SĂ'*,* expressing lack of necessity, and *trebuie să nu* 'must SĂ not', expressing interdiction, as well as at the ambiguous *nu trebuie să* 'not must SĂ', a negated modal with two intonationally differentiated meanings (lack of necessity and interdiction). Experimental evidence from a ternary reward task shows that, unlike adults, Romanian 5-year-olds interpret both interdiction and lack of necessity forms as interdiction, regardless of surface scope or intonation. Children's answers may reflect an initial preference for strong scope and/or a tendency to choose one single alternative out of several.

## 1 Motivation for the study

It has been shown that children prefer strong (interdiction) readings of negated modals both in production and comprehension. An investigation of the spontaneous speech of French and Spanish children (Jeretič 2018) reveals that children use weak (lack of necessity) negated modals much less than predicted by the input, using strong modals instead. Experimental work by Gualmini & Moscati (2009) shows that children tend to interpret *può non* ('may not') as 'non può' ('cannot'). Moscati & Crain (2014) and Koring et al. (2018) further reveal a similar preference for strong interpretations of negated epistemic modals in Italian and Dutch.

## 2 Theoretical problem and contribution

Our contribution is to investigate children's scopal preferences in a different environment and language: deontic necessity (rather than epistemic necessity) and negation in Romanian. We explicitly address the question which reading comes first: the weak (lack of necessity) reading or the strong (interdiction) reading. Several proposals have been put forth in the literature. One possibility is that the weak reading is primary, and the strong reading is derived from it either via *negative strengthening* (in accounts which treat *must* as a PPI and *need* as an NPI, such as Israel 1996, Homer 2010, 2015, Iatridou & Zeijlstra 2013) or as *a scaleless implicature* (Jeretič 2021). Another possibility is that children interpret negation and modals based on *surface scope* (Musolino 1998). A third possibility is that the strong reading is primary, and, consequently, acquired first. Children may start out with *strong scope* preferences (Semantic Subset Principle-see Crain et al. 1994) and/or they may show *premature closure* (Acredolo & Horobin 1987, Ozturk & Papafragou 2015, Leahy & Carey 2020, a.o.), committing to only one alternative out of several when handling lack of necessity, a modal notion involving multiple alternatives. To test the predictions of these accounts, we conducted an experiment testing Romanian children's understanding of negated modals expressing lack of necessity or interdiction. Unlike adults, Romanian 5-year-olds mostly interpret all negated modals as interdiction, a finding which supports the *Semantic Subset Principle* and *premature closure*.

## 3 Investigating deontic necessity and negation in child Romanian experimentally
### 3.1 Aim

We look at *nu e nevoie să* 'not is need SĂ'*,* which unambiguously expresses lack of necessity, *trebuie să nu* 'must SĂ not', which unambiguously expresses interdiction, and *nu trebuie să* 'not

must SĂ', a negated modal with two readings (lack of necessity and interdiction), which, apart from context, are disambiguated through prosody (https://osf.io/tas6k/?view_only=941c5bc7ec664e159434fbe9ce0dcb5b): for interdiction, F0 goes from 230 Hz to 370 Hz (*nu*) and then to 230 Hz (*trebuie)*, while for lack of necessity, F0 stays around 400 Hz for *nu* and the first syllable of *trebuie* and then drops to 250 Hz We argue *nu* has a contrastive L+>H* accent for interdiction, and an L accent for lack of necessity (Estebas-Vilaplana & Prieto (2010). Given the important role of prosody for interpretation, we are also interested in whether children and adults are equally sensitive to it, in line with previous studies by Armstrong (2014) and Stoddard & de Villiers (2021). In a previous forced choice task we conducted, Romanian 5-year-olds could accurately identify interdiction based on the different intonations of *nu trebuie să.* We here investigate experimentally Romanian children's scopal and prosodic preferences for both unambiguous and ambiguous negated necessity modals.

3.2 Participants
We tested 25 Romanian monolingual children (Mean age: 5;27; Age range: 5-5;11, 12 M, 13 F) and 37 adults.

3.3 Methodology
We employed a ternary reward task, inspired by Katsos & Bishop (2011). Participants are familiarized with contexts where a (grand)parent and their child are looking at two different fruits/drinks/toys/pieces of clothing together. The (grand)parent tells the child that he/she must not/need not do a certain action X. The child then performs action X or action Y. Participants have to reward the child with a sad face if he/she did something forbidden by the (grand)parent, a blue star if what he/she did was so-so, but it was allowed by the (grand)parent, and two blue stars if what he/she did was the best thing, exactly what the (grand)parent said (Table 1). Participants were presented with 32 sentences addressed by the (grand)parent to the child character: 16 sentences with an ambiguous modal (*nu trebuie să* 'not must SĂ' with a *Necessary-Not* or *Not-Necessary* intonation) and 16 with unambiguous modals (*trebuie să nu* 'must SĂ not', expressing interdiction, and *nu e nevoie să* 'not is need SĂ', expressing lack of necessity). The child performed the forbidden/unnecessary action X in half of the sentences and the action Y in the other half. The materials were recorded and analyzed in Praat.

Table 1. Example of an experimental item for *nu trebuie X* 'not must X' with a *Not-Necessary* Intonation, where the child performs action X

Mama şi fata se uită la două fructe: o prună şi un ananas. Mama îi spune fetei:
Mother and daughter are looking at two fruits: a plum and a pineapple. Mother tells the daughter:

"**Nu trebuie să mănânci pruna**" (*Not-Necessary* Intonation).
not must   SĂ eat        plum-the
'You need not eat the plum'

Fata mănâncă pruna.
The girl eats the plum.

How would you reward the daughter?

3.4 Expectations
If the child character performs action X, we expect adults to give more *one blue star* rewards for *nu e nevoie să* and for *nu trebuie să* with a *Not-Necessary* intonation than for *trebuie să nu* and

for *nu trebuie să* with a *Necessary-Not* intonation, where the expected reward is clearly *a sad face*. If the character performs action Y, we expect more *one blue star* rewards for lack of necessity modals and more *two blue stars* rewards for interdiction modals. If children interpret lack of necessity as interdiction, we generally expect them to give fewer *one blue star* rewards than adults in the same contexts, for all negated modals.

3.5 Results
The differences between children and adults appear only when the character performs action X (Figure 1). Here, adults reward the character with significantly more *one blue star* rewards and fewer *sad face* rewards after lack of necessity statements (with *nu e nevoie să* or *nu trebuie să* with a *Not-Necessary* intonation) than after interdiction statements (with *trebuie să nu* and *nu trebuie să* with a *Necessary-Not* intonation). In contrast, while children also give slightly more *one blue star* reward, they give significantly fewer *one blue star* rewards than adults. Children's interdiction preference is confirmed by logistic regressions with Reward type/Interpretation as a DV, Modal, Group as fixed effects, and random slopes per Item, Participant.

Figure 1. Rewards given by adults and children
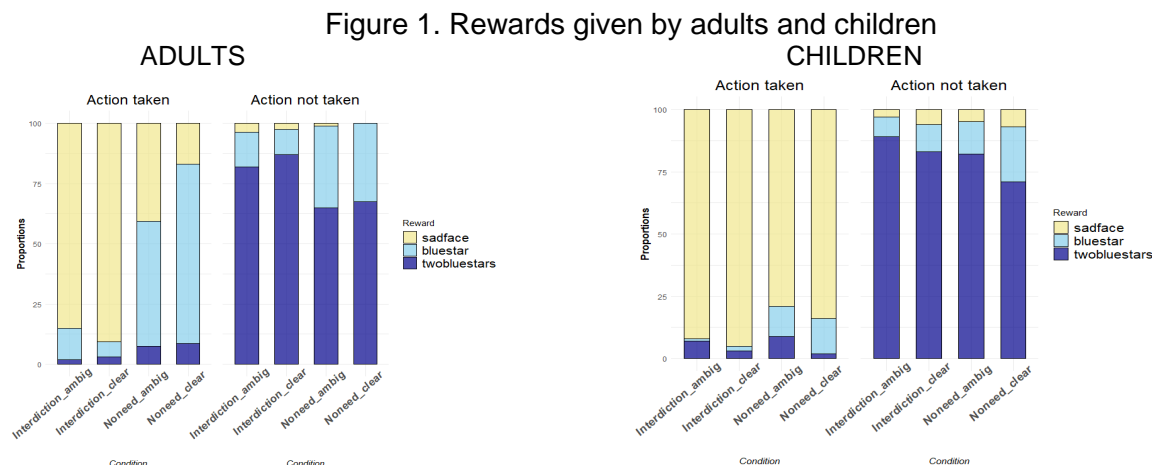


**Legend**: Interdiction_ambig = *nu trebuie să* 'not must SĂ' with interdiction intonation, Interdiction_clear = *trebuie să nu* 'must SĂ not', Noneed_ambig = *nu trebuie să* 'not must SĂ' with lack of necessity intonation, Noneed_clear = *nu e nevoie să* 'not is need SĂ'

# 4 Account
We find that interdiction is the primary reading of children: they interpret weak lack of necessity negated modals as expressing interdiction, while never interpreting interdiction as lack of necessity. Interestingly, in the current task, children's prosodic sensitivity is obscured by their interpretation of (un)ambiguous lack of necessity as interdiction. To capture the results, *negative strengthening* would have to assume children obligatorily move necessity above negation at LF- which might be costly. *A scaleless implicature account* would have to assume children obligatorily compute scaleless implicatures. However, children are known to generally derive implicatures to a lower extent than adults (Noveck 2001, even though they are more adult-like with free choice inferences-e.g., Tieu et al. 2016). It is thus unlikely they would strengthen lack of necessity to interdiction as a default. Our findings also cast doubt on *a surface scope explanation*. Given that, in Romanian, the negative marker *nu* 'not' occurs before the modal, except for *trebuie să nu*, a surface scope account (as in Lidz & Musolino 2002) would predict lack of necessity readings for all necessity modals except for *trebuie să nu*, contrary to our findings. Instead, our results are more compatible with *a strong scopal preference account*, where children initially prefer to assign unique strong scope. This account is supported by similar findings for ambiguous sentences with negation and modality/quantifiers (Musolino & Lidz 2006, Gualmini & Moscati 2009, a.o.). Another (additional) explanation for children's dispreference for lack of necessity might be that lack of

necessity involves multiple alternatives, and children are known to show *premature closure* (Acredolo & Horobin 1987, Ozturk & Papafragou 2015, Leah & Carey 2020, a.o.), a cognitive tendency to commit to only one alternative when faced with several.

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