Children's Understanding of Weak Negative Epistemic Sentences in Turkish

Research on children's interpretation of weak negative epistemic sentences in English (Noveck, 2001) and in Italian (Moscati 2008; Moscati and Crain 2014 [M&C, henceforth]) has revealed that 5-year-old children tend to assign strong readings to weak negative epistemic sentences, hence interpret (1) as (2). Children's initial preference for strong readings is accounted for through the Semantic Subset Principle (SSP) (M&C 2014) which argues that weak and strong negative epistemic sentences stand in a superset/subset relation whereby, children firstly adopt the subset value (strong reading) and generalize it to the superset (weak reading) resulting in errorful interpretations. Bringing in acquisition data from Turkish, a morphologically rich, head-final language that assigns scope relations of negation and modality by morphology, this study attempts to provide new insights into the discussion and show that Turkish-speaking children also tend to assign strong readings to weak negative epistemic sentences, supporting SSP.

(1) Mary might not come   (possible > not = weak reading)
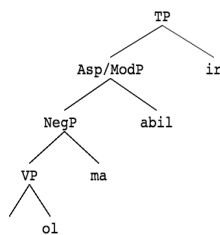(2) Mary cannot come   (not > possible= strong reading)

According to (M&C, 2014), negation can combine with an epistemic modal in two ways: (i) it can either take wide scope (not > possible reading) or (ii) narrow scope (possible > not reading). In Italian, when negation and epistemic modality combine, scope relations are determined by the word order. Thus, the interaction between modality and negation is very transparent. Yet, unlike Italian and English, in Turkish, the modal system is more complex and the scope relations of negation and modality are assigned not by syntax, but by morphology, i.e., through bound morphemes, as in (3) and (4):

(3) Deniz çal-ma-(y)abil-ir   (4) Deniz çal-a-ma-z
    verb-NEG-MOD-aorist.3sg   verb-MOD-NEG-aorist.3sg
  'Deniz might not play.'   'Deniz cannot play.'

In (3) negation occurs before the modal. But, (3) can only be assigned a weak reading (mod > neg). In (4), however, the modal precedes negation and the only possible reading is a strong one (neg > mod). Following Kelepir (2001), we assume the syntactic structures in (3a) and (4a) for (3) and (4) respectively. In (3a), the modal takes scope over negation, yielding a weak reading. In (4a), on the other hand, negation takes scope over modality, generating a strong reading.

(3a)   (4a)

```
            TP                                     TP
           /  \                                   /  \
     Asp/ModP   ir                            NegP    z
        /  \                                  /  \
     NegP  abil                         Asp/ModP  ma
     /  \                                  /  \
    VP   ma                               VP   a
    /\                                    /\
   ol                                    ol
```
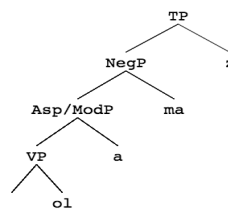
As Turkish embodies a more complex picture in terms of modality and scope relations, in this paper we aim to show how Turkish-speaking children interpret weak negative epistemic sentences. To test this, we have designed an experiment that was

inspired by the procedure implemented in M&C (2014). To eliminate possible confounding effects and draw children's attention, we have used a computer-based experimental design that consisted of four interconnected scenarios. In each scenario one character from Sesame Street prepares a guessing game for his/her friend. In each case, there are three containers. The content of two containers is visible, whereas the third box is closed. The child is told that the content of the closed box is identical with one of the open boxes. Then the character makes predictions about the content of the closed box and the child's task is to judge whether or not the character makes true guesses. Implementing a Truth-Value-Judgment-Task we have tested 9 children so far and collected children's judgments in 4 conditions where each condition contained 6 sentences (2 positive as in (5); 2 negative-weak as in (6); and 2 negative-strong as in (7)).

(5) Positive   Verb-in-use
a. There might be a car in the box. (T)   ol-abil-ir
b. There might be a ball in the box (F)   verb-MOD-aorist.3sg
(6) Negative Weak
a. There might not be a teddy bear in the box. (F)   ol-ma-(y)abil-ir
b. There might not be a car in the box. (T)   verb-NEG-MOD-aorist.3sg
(7) Negative Strong
a. There cannot be a teddy bear in the box. (F)   ol-a-ma-z
b. There cannot be a ball in the box. (T)   verb-MOD-NEG-aorist.3sg

As illustrated in Table 1, as opposed to an almost adult-like interpretation in negative-strong sentences, negative-weak sentences were interpreted correctly with a rate of 33%. Hence 67% of the children assigned strong readings to weak negative epistemic sentences. Furthermore similar to the findings in M&C (2014), the percentage of correct answers in the Positive True condition was relatively low, which suggests that children interpreted such sentences as if there were a covert *only* in the sentence. Thus though Turkish differs from Italian & English in terms of its modal system and scope relations, Turkish-speaking children have been found to behave like their Italian and English speaking age-mates and to observe the SSP.

Groups	Positive		Negative Weak		Negative Strong	
	T	F	T	F	T	F
Adults (n=10; age range: 24-38, mean: 31;7)	100%	100%	97,50%	100%	100%	100%
Children (n=9; age range: 4;7-6;3, mean: 5;3)	72,22%	97,22%	33,33%	88,88%	97,05%	97,22%

Table 1: Proportion of correct answers by condition for the two groups

Selected References

Kelepir, M. (2001). Topics in Turkish Syntax: Clausal Structure and Scope. Ph.D. dissertation, Massachusetts Institute of Technology. Distributed by MIT Working Papers in Linguistics, Cambridge, MA.

Moscati, V. (2008). Strength and weakness of children's interpretation of modals. In Y. Otsu (Ed.), *Proceedings of the 9th Tokyo Conference on Psycholinguistics*, 103–119. Tokyo: Hituzi Syobo.

Moscati, V., & Crain, S. (2014). When Negation and Epistemic Modality Combine: The Role of Information Strength in Child Language. *Language Learning and Development*, 10(4), 345–380.

Noveck, I. (2001). When children are more logical than adults: Experimental investigations of scalar implicature. *Cognition*, 78(2), 165–188.