**Going beyond semantics: The pragmatics of responding *Si* to a negative question**

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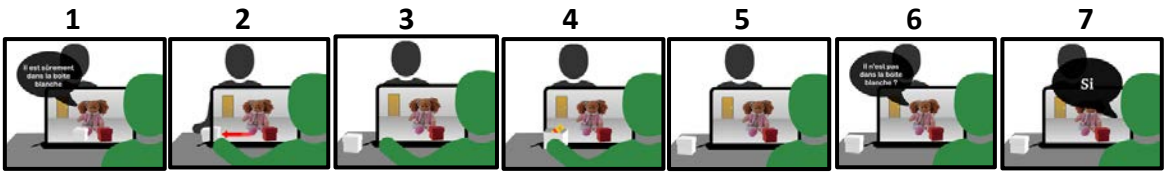
Negative questions are prone to producing ambiguity. To illustrate, imagine Michelle who, asks (1) to her new colleague, Barack:

(1) Do you not eat meat?

Classical responses in English, *Yes* or a *No*, are ambiguous. For example, a *Yes* could confirm that *Barack does not eat meat* or it could be referring to the question's underlying affirmative proposition (*Barack does indeed eat meat*). A *No* presents its own ambiguities. Several languages have answering options that transcend these ambiguity concerns through a *contrapositive* (Choi, 1991). If the above exchange were to take place in European French (*Vous ne mangez pas de viande ?*) and Barack does indeed eat meat, his natural response would be *Si*. This response option is the focus of the current submission.

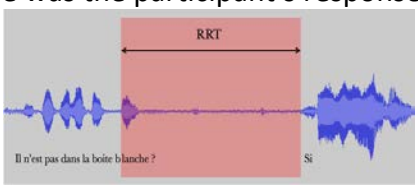
Two semantic accounts of answering systems that include contrapositives assume that these response particles encode a disharmony between the information in the antecedent sentence and reality. For Farkas and Bruce (2010) a *Si* would mark a "reverse", much like a "Non" would to an affirmative question and for Krifka (2013) the contrapositive would "reject" the information in the antecedent sentence or question based on facts in context. According to our view, a contrapositive such as *Si* has two pragmatic components that are unflagged in the semantic accounts. The first is a drawing out of the "positive antecedent" from a negative sentence. While Krifka's account does consider that a positive antecedent can emerge from the negative statement, it is considered one option of two depending on salience (it is considered on a par with drawing out the literal negative antecedent). In our account, drawing out the positive antecedent from negative sentence is a non-trivial pragmatic step that requires more effort than adopting the literal negative statement (see Tian & Breheny, 2016, for a review). The second is that the *Si* commits the answerer, not to reject or reverse the questioner's antecedent but, to actually *agree* with the antecedent question's (or statement's) affirmative. This would explain why *Si* is considered to possess a positive *absolute* polarity in the Farkas & Bruce system, much like a *Oui* to an affirmative question. The upshot is that the answerer edifies the questioner's initial epistemic state.

To test our claims we developed a novel paradigm (consisting of 40 trials) that prompts participants to naturally answer *Oui, Non,* and *Si.* The game behind each trial is to find a candy hidden in one of two boxes (say, in either a red or white box), both of which can be seen as covered on a screen (please magnify the exemplary trial below). The puppet makes two statements. The first is a belief state (first panel). The puppet asserts (a) an Affirmative belief (e.g. *It is surely in the white box*), (b) a Negative belief (e.g. *It is surely not in the white box*), or; (c) a Neutral belief (*I don't know where it is*). (In the interest of length, we do not describe the purpose of this here [but see Schmerse et al., 2013]). Then, a box is made to appear to slide off the screen (through experimenter intervention) and on to the table (panels 2-3). The participant inspects the emerged box and places it back down re-covered (panels 4-5). The on-screen puppet then asks (sixth panel) an affirmative or negative question, e.g. *Il est/n'est pas dans la boite blanche? [It is (not) in the white box?*]. In the trial below, the puppet begins with an affirmative belief, the participant finds a candy in the emerged box, and the puppet asks a negative question before the participant provides a *Si* response (see the last panel):

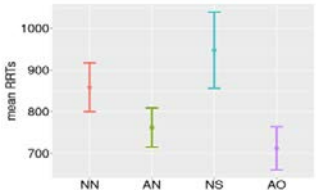



If the question (in the sixth panel) were affirmative, the appropriate answer would be *Oui* and if the presented box were empty instead of full (in fourth panel), the appropriate answer would be *Non* (regardless of the question's polarity). This makes for four experimental conditions providing 24 of the trials: Affirmative-Oui (AO), Affirmative-Non (AN), Negative-Si (NS), Negative-Non (NN).

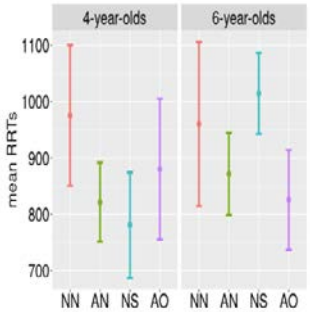
The participant's spontaneous oral responses were recorded and transcribed. Aside from rates of appropriate responses, our main dependent variable was the participant's response latency, referred to as the *Response Reaction Time*, or *RRT.* As illustrated on the right, this is determined by measuring latency (via Audacity software) between the earliest moment there is enough information to answer, i.e. at the start of mentioning the disambiguating box color (e.g., "bl..." in "boite *bl*anche"), and the moment the participant voices a response. We consider the RRT a measure of time to fully process the incoming question and we assume that the three classic types of responses are equally available. Reported effects are based on Bayesian models of the outcomes.




Experiment 1 included 41 Adults and 27 6-year-olds. The two age groups' rates of accurate responding were comparable as were their *patterns* of RRT across conditions. The only developmental difference was that the 6-year-olds were consistently slower than the adults. We thus combined the latency data across ages and confirmed that the NS condition was the slowest of the four (see Figure on right). This is a novel finding. In similar classic studies that do not offer a *Si*-like option, e.g. Clark & Chase (1972), NN-type responses are slowest.




In an effort to uncover developmental effects, Experiment 2 investigated (21) 4-year-olds who were compared to the 6-year-olds. While rates of accuracy were comparable across the two ages, the RRT results were remarkable. As can be seen here, the 4-year-olds' responses were comparable to the 6-year-olds' across the three control conditions (AO, AN, and NN). However, the 4-year-olds' NS responses were *fastest* (in fact, of all three age groups). This indicates that the youngest know that the *Si* response is appropriate in the context of a negatively polarized question; nevertheless, they do not fully appreciate its pragmatic potential. In our view, the youngest children are applying a semantic representation, i.e. they are not addressing the questioner's implicit affirmative proposition.




*Conclusions.* This study used natural responses and latencies to show that a *Si* response enjoins pragmatic processes. Adults and 6-year-olds reveal that effortful pragmatic inference-making arises when *Si* is called for, indicating that a pragmatic procedure is part of its meaning. Four-year-olds' fast *Si* responses indicate that they do not incorporate a pragmatic procedure, pointing to their use of a semantic representation. The semantic-cum-pragmatic reading of *Si* with age makes it compatible with many developmental pragmatic phenomena.

*References.* **Choi, S. (1991)** *Dev Psy, 27(3),* 407-420. **Clark & Chase (1972**) *Cog Psych, 3(3),* 472-517. **Farkas & Bruce (2010).** *J of Semantics, 27*, 81–118. **Krifka (2013).** *SALT* (Vol. 23, pp.

1-18). **Schmerse, Lieven & Tomasello (2013)** *J of Semantics*, *31*(1), 115-133. **Tian & Breheny (2016)** In *Negation and polarity: Experimental perspectives* (pp. 21-43).