

**An insight on (the generalization of) early negative concord: the case of Italian fragment answers**

**Background.** One dimension of cross-linguistic variation concerns the readings that may, or may not, be allowed when negative morphology surfaces on multiple elements. A well-known tripartite distinction (Giannakidou 2000, Zeijlstra 2004, Moscati 2006) is the one between (i) languages that allow Double Negation readings (e.g. Standard English), (ii) languages that do not and show Strict Negative Concord (e.g. Rumanian), and languages (iii) in which double negation is allowed depending on word order, as in Non-Strict Negative Concord Languages (e.g. Italian).

The question about how and when children converge on the right grammar has been recently addressed by Thornton et al. (2016), who have shown that although adult English speakers can easily access DN readings in a controlled experimental setting, 5 y.o. English children fail to do so. They initially adopt a deviant reading, the one compatible with NC concord type of languages.

A corollary of that proposal would be that, if children initially fail to access DN readings in a Double Negation language like English (see Blanchette 2013, 2015 for a discussion of the DN status of English varieties), they are also expected to do the same in a Non-Strict NC languages. Similarly to the contrast unveiled in English in the Thornton et al. study, also young speaker of Italian, a Non-Strict NC language, should differ from adults in those contexts where DN is allowed. A good testing ground is given by Fragment answers in response to negative questions. Consider the following example from Italian (Non-Strict):

- (1) Q: Chi non è venuto?      “Who didn’t come?”  
A: Nessuno                      “Nobody”                      --> DN: nobody didn’t come = Everyone came

In this context, adult Italians can interpret the Fragment (1A) expressing a double negation. Thus, under the HP that children initially overextend NC readings, the prediction is that Italian children would crucially differ from adults. Next, we will present a novel study testing children’s interpretation of N-Words (Laka 1990) in fragment answers.

**The study.** To test whether Double Negation is initially unavailable to children, also in Non-Strict NC languages, we test Italian children comprehension of negative fragments employing a truth-value judgment task (Crain and Thornton, 1998). We tested two experimental conditions: in Condition 1 (2), children had to judge if a fragment uttered as an answer to a negative question give rise to a DN interpretation:

- (2) Fragment (Condition 1)  
Q: *chi non va sul trattore?*  
who doesn’t go on the tractor?  
A. *Nessuno*                      (DN= True)  
nobody

In Condition 2 (3) we used relative clauses to control if children can actually process two negative operators, so to exclude that concord reading could be explained by a more general cognitive constraints. In Condition 2 the two negations were separated by a clause boundary: one negation in the matrix, and one in the relative clause. In this configuration, Negative Concord is universally blocked:

- (3) Relative (Condition 2)  
*Il nano [che non va allo spettacolo] non mangia un gelato con gli amici*  
the dwarf [who doesn’t attend to the show] doesn’t eat an icecream with friends (DN= True DN)

Stimuli in Condition 1 and 2 were uttered after a short story context that made the DN interpretation felicitous (in the examples, it was about a set of dwarfs), and TVJs were counterbalanced: in half of

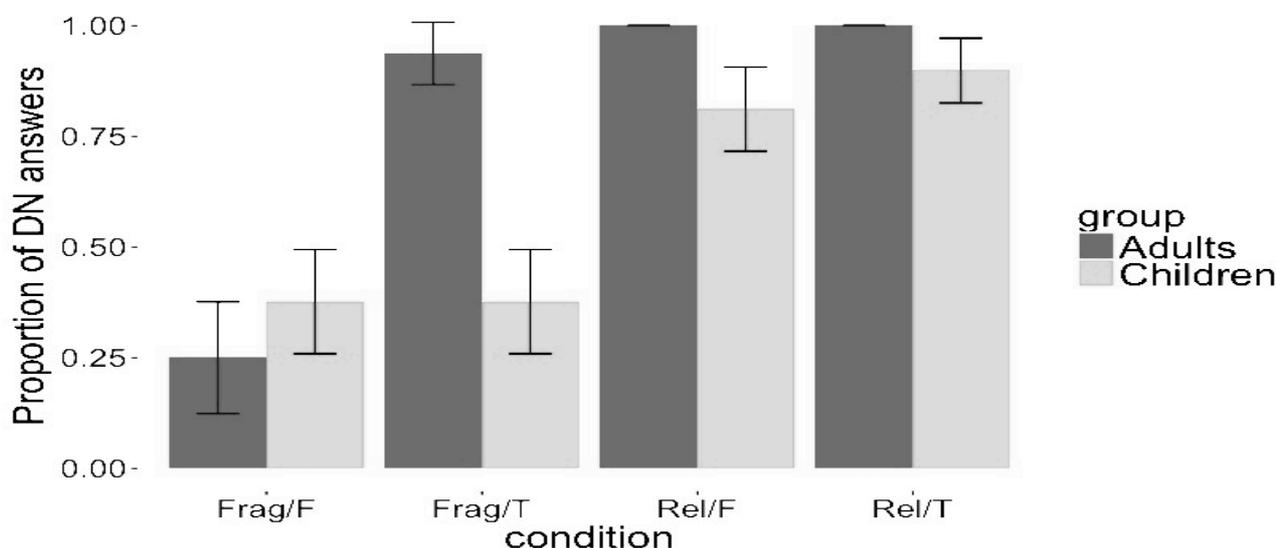
the cases the story made the sentence/fragment True under the DN interpretation, in the other half False under the same reading. As additional controls, we ask participants to judge other Wh-questions, negative and positive, to be sure that children paid attention to the polarity of the question in Condition 1. *Materials.* We used 6 stories (3 true, 3 false) per condition, with 12 experimental trials in total. *Participants* 23 Italian children and 16 adults for the control group (Table 1).

Group	N	Age	Mean
Children	24	4;6-6;3	5;5
Adults	17	>18	23;4

**Table 1:** experimental and control group; number of participants; age range and mean.

*Results. Relative clauses:* Figure 1 shows that both children and adults consistently choose the DN interpretation in the relative condition (both with True and False answers) above 80%. *Fragments:* a) We found a sharp asymmetry between adults and children in Fragments/True: while adults accepted the DN interpretation in True fragments (2), children rejected it in the majority of the cases: they failed to access the DN interpretation. b) When the story made the Fragment False, both adults and children had trouble in accessing the DN interpretation: both failed providing answers consistent with a (true) NC interpretation. Data were analyzed in R using a GLMM, revealing a main effect of Group ( $p < .01$ ), Condition ( $P < .05$ ) and Group\*Condition ( $P < .05$ ).

### % of DN answers in relatives and fragments



**Figure 1.** Proportion of correct responses in the two conditions (Condition 1, Fragments; Condition 2, Relatives) for each group. True and False answers are plotted separately (/F, /T).

**Discussion:** The high performance from both groups in Condition 2 demonstrates that negation is well processed, when included in two distinct clauses and no NC is possible. On the other hand, in Condition 1 a sharp asymmetry emerged between adults and Children when the Fragment-Answer was True: children fail to access DN, a result predicted by the experimental hypothesis. Children also did not access the DN reading when it was False, again in line with the predictions.

What remains to be accounted for is the fact, partially unexpected (but see Espinal & Tubau 2016 for a similar result in Spanish and Catalan), that adults behaved like children when the Fragment-Answer was False. Adults accepted the fragment selecting an alternative (NC) interpretation, the same children do. This can be tentatively accounted for invoking the Principle of Charity: adults force an alternative interpretation (NC) to make the speaker's sentence true. More details will be provided on individual data, showing a bimodal-distribution in both groups.

**Selected References:** Thornton, R., Notley, A., Moscati, V., & Crain, S. (2016). Two negations for the price of one. *Glossa: a journal of general linguistics*, 1(1), 45. Espinal, M. Teresa & Susagna Tubau. 2016. Interpreting argumental n-words as answers to negative wh-questions. *Lingua* 177. 41–59. Giannakidou, Anastasia. 2000. Negative... concord? *Natural Language and Linguistic Theory* 18. 457–523.

## Implicit Causality: A comparison of English and Vietnamese verbs

Binh Ngo and Elsi Kaiser (University of Southern California)

[binhnngo@usc.edu](mailto:binhnngo@usc.edu)

In 'because'-sequences, verbs influence the likelihood of subsequent pronouns referring to subjects or objects (ex.1), an effect called *implicit causality (IC)*, Garvey/Caramazza'74).

- (1a) Lisa frightened Kate because she<sub>Lisa</sub>.... [to frighten: subject bias]  
(1b) Lisa blamed Kate because she<sub>Kate</sub>... [to blame: object bias]

In addition to its significance for theories of reference resolution (e.g. Caramazza et al.'77), this effect is important for cognitive and socio-cultural research (Rudolph & Försterling'97). A fundamental question has to do with the *source* of IC effects (e.g. Hartshorne/Snedeker'13) and how they relate to verb classes (e.g. Stimulus-Experiencer). Furthermore, many researchers use IC as a *tool* to investigate other aspects of pronoun interpretation (e.g. Kehler/Rohde'13). Crucially, all this work requires *access to pre-existing information about the subject-vs.-object biases of individual verbs*. Large-scale studies provide public datasets for English (Ferstl et al.'11; Hartshorne/Snedeker'13) and Spanish (Goikoetxea et al.'08).

However, lack of large public datasets for typologically-diverse languages is a serious limitation. It is problematic for **practical reasons**--it poses challenges for experiments on languages without accessible IC norms--and **theoretical reasons**--it limits our ability to understand IC effects. To address this, we conducted a large-scale study of 149 verbs in Vietnamese. The resulting database can serve as a tool for theoretical and practical applications of crosslinguistic research relating to implicit causality.

**Data collection:** Hartshorne/Snedeker'13 used frames like (2), with nonce words to avoid additional semantic biases. We adapted their design (ex.3). Ninety-eight Vietnamese native speakers (in Vietnam) read sentences and answered questions (3a-b). Each participant saw multiple items but only saw each verb once. Each sentence had two male or female names.

- (2a) Sally frightens Mary because she is a dax. [dax is a nonce word]  
(2b) QUESTION: Who do you think is the dax? Sally Mary  
(3a) *Trúc la Hằng vì cô ấy dẫn tuê*  
Trúc scolded Hằng because she is dẫn tuê. [dẫn tuê is a nonce word]  
(3b) QUESTION: Who is dẫn tuê? \_\_\_\_\_ [write down a name]

Vietnamese pronouns are derived from kin terms (e.g. *anh* lit. 'older brother'/he; *cô* lit. 'father's sister'/she). We tested both old and young forms.

In addition to creating a database of Vietnamese verb IC data, we also investigate whether IC verbs in Vietnamese and English (Ferstl et al.'11) behave similarly relative to their semantic verb class: (i) Agent-Patient, (ii) Agent-Evocator, (iii) Stimulus-Experiencer and (iv) Experiencer-Stimulus verbs.

**Results:** Table 1 shows the percentages of subject responses for Vietnamese and English, by verb class. Collapsing across verb classes, we observe a correlation between Vietnamese and English ( $p < 0.001$ ), though the subject bias is stronger in English.

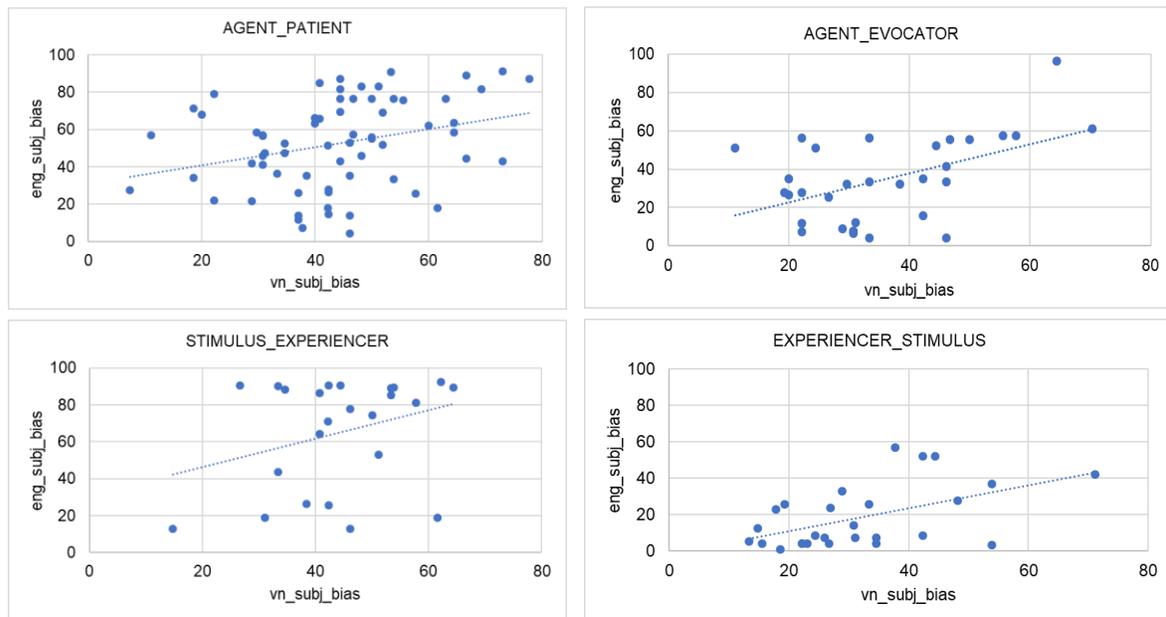
**Verb classes:** Subject biases of Agent-Patient, Agent-Evocator and Experiencer-Stimulus verbs in English and Vietnamese are correlated ( $p$ 's  $< 0.05$ , Fig.1). However, no correlation is found with Stimulus-Experiencer verbs (English: 65% subject responses; Vietnamese: 55.6% object responses). (The object bias is stronger in Vietnamese Experiencer-Stimulus than Stimulus-Experiencer verbs ( $p < 0.01$ ); thus, these categories are still distinct in Vietnamese). Although both languages are sensitive to the presence of the Stimulus, the magnitude differs crosslinguistically for the Stimulus-Experiencer class, to the point of 'flipping' from a subject preference (E) to an object preference (V). Our findings diverge from Hartshorne et al.'13 who found a crosslinguistically-consistent subject preference in this class.

(As expected, information about age and gender encoded on kinterm pronouns has no effect on subject preference strength,  $p$ 's>0.2).

Our study highlights the importance of language-specific IC research--rather than assuming crosslinguistic generalizability--and provides a database for future work.

<b>verb class</b>	<b>% subject responses</b>	
	<b>Vietnamese</b>	<b>English</b>
Agent_Evocator	35.88	34.78
Agent_Patient	43.88	52.41
Stimulus_Experiencer	44.38	65.13
Experiencer_Stimulus	31.77	18.49
<b>Overall average</b>	<b>38.97</b>	<b>42.7</b>

**Table 1.** Mean % of subject continuations for English and Vietnamese verbs in the four classes. (English data from Ferstl et al.'11)



**Figure 1.** Scatterplots showing the relation between the strength of subject bias of Vietnamese (vn) verbs and English (eng) verbs in four semantic categories. (Each dot represents one verb. Vietnamese verbs are matched with the closest English equivalents in Ferstl et al.'11.)

**References:** Garvey & Caramazza. (1974). Implicit causality in verbs. *LI*. || Caramazza et al. (1977). Comprehension of anaphoric pronouns. *J. verbal learning & behavior* || Ferstl et al. (2011). Implicit causality bias in English: A corpus of 300 verbs. *Beh. Res. Methods* || Goikoetxea et al. (2008). Normative study of the implicit causality of 100 interpersonal verbs in Spanish. *Beh. Res. Methods* || Hartshorne et al. (2013). Are implicit causality pronoun resolution biases consistent across languages and cultures? *Exp. Psych.* || Hartshorne & Snedeker. (2013). Verb argument structure predicts implicit causality: The advantages of finer-grained semantics. *LCP* || Kehler & Rohde (2013). A probabilistic reconciliation of coherence-driven and centering-driven theories of pronoun interpretation. *Theoretical Ling.* || Rudolph & Försterling. (1997). The psychological causality implicit in verbs: a review. *Psych. Bulletin* ||

## Logophoricity explains non-local binding of Chinese *ziji* and *taziji*.

Yingtong Liu (Harvard University)

**1. Background and Goal:** Anaphors in many languages do not obey the ‘canonical’ Binding Condition A (Chomsky, 1986), such as Icelandic *sig* and Mandarin *ziji*. Two main competing approaches have been proposed to capture binding beyond the local domain: (i) The LONG-DISTANCE BINDING (LDB) theory derives non-local binding via covert cyclic movement and turns non-local binding into local binding which always obeys Condition A. (Pica, 1987; Cole et al., 1990; Huang & Tang, 1991) (ii) The LOGOPHORICITY (LOG) theory explains exempt anaphors by logophoric rather than pure structural constraints (Sells, 1987; Huang & Liu, 2001; Charnavel & Sportiche, 2016). The two theories make distinct predictions on the syntactic distribution of reflexives and the referential dependencies between reflexives and their antecedents. The LDB theory predicts that antecedents should always **c-command** the reflexives, while the LOG theory predicts that reflexives need not be c-commanded by their antecedents if they are **logophoric**. This paper aims to experimentally test the two competing theories by investigating the binding conditions of Chinese reflexive *ziji* and *taziji* using acceptability judgment tasks. The results about *ziji* support the LOG theory against the LDB theory. Furthermore, our results reveal that *taziji*, though usually considered as a local anaphor (e.g., Cole, Hermon & Huang, 2006), can in fact similarly be exempt from binding under logophoric conditions.

**2. Diagnostics to tease apart the two competing theories**– One way to disentangle the 2 theories is to test if *ziji/taziji* can take a non c-commanding antecedent while manipulating the logophoric status of the antecedent, as in (1). In (1a), ‘According to *Lisi*’ expresses *Lisi*’s attitude, while ‘speaking of *Lisi*’ in (1b) usually expresses the speaker’s rather than *Lisi*’s perspective (cf. Kuno, 1987). The LOG theory thus predicts (1a) to be **more** acceptable than (1b). The LDB theory predicts both (1a) and (b) to be ungrammatical, because the antecedents do not c-command *ziji/taziji*. Another way is to test whether *ziji/taziji* can always take a c-commanding antecedent both in logophoric and non-logophoric conditions, as in (2) and (3). ‘Because’-clauses in (2ab) denote the mental status of the main-clause subject *Lisi*, while ‘when’-clause in (2c) is from the perspective of the speaker (Huang & Liu 2001). Similarly, *Lisi* is the logophoric center of (3a) but not of (3b), because logophoricity implies consciousness and *Lisi* cannot be aware of the killing event described in the relative clause (cf. Huang & Liu, 2001). The LOG theory thus predicts (2ab) and (3a) to be **more** acceptable than (2c) and (3b), respectively, but the LDB theory predicts no difference between (2ab) and (2c), (3a) and (3b).

- (1)a. *Ju Lisi<sub>k</sub> shuo, zhejianshi shanghai-le ziji<sub>k</sub> (or taziji<sub>k</sub>)* {ziji=Lisi} (logophoric)  
‘According to *Lisi<sub>k</sub>*, this event hurt himself<sub>k</sub>.’
- b. *Shuodao Lisi<sub>k</sub>, zhejianshi shanghai-le ziji<sub>k</sub> (or taziji<sub>k</sub>)* (non-logophoric)  
‘Speaking of *Lisi<sub>k</sub>*, this event hurt himself<sub>k</sub>.’
- (2)a. *Lisi<sub>k</sub> likai-le gongsi, yinwei nvjingli piping-le ziji<sub>k</sub> (or taziji<sub>k</sub>)* {ziji=Lisi} (logophoric)  
‘*Lisi<sub>k</sub>* left the company, **because** the female manager criticized himself<sub>k</sub>.’
- b. *yinwei nvjingli piping-le ziji<sub>k</sub> (or taziji<sub>k</sub>), suoyi Lisi<sub>k</sub> likai-le gongsi.* (logophoric)  
‘**Because** the female manager criticized himself<sub>k</sub>, so *Lisi<sub>k</sub>* left the company.’
- c. *Dang nvjingli piping-le ziji<sub>k</sub> (or taziji<sub>k</sub>) de shihou, Lisi<sub>k</sub> likai-le gongsi.* (non-logophoric)  
‘**When** the female manager criticized himself<sub>k</sub>, *Lisi<sub>k</sub>* left the company.’
- (3)a. *Lisi<sub>k</sub> henxiangmai yizhi neng baohu ziji<sub>k</sub> (or taziji<sub>k</sub>) de shouqiang.* (logophoric)





RESULTS. Analyses of accuracy data revealed significant main effects for word order (94% for SOV and 79% for OVS sentences,  $F(1, 27) = 34.02, p < .0005$ ) and casemarking (97% for casemarked sentences and 77% for non-casemarked sentences,  $F(1, 27) = 41.32, p < .0005$ ). There was a significant interaction between word order and overt casemarking ( $F(1, 27) = 31.84, p < .0005$ ). As shown in Figure 1, adults have no difficulty understanding  $SO_iV$ ,  $SO_oV$  and  $O_iVS$  sentences, but perform very poorly (60% correct) on  $O_oVS$  sentences. Analyses of individual subjects' accuracy data revealed that, of the 28 adults, 21 clearly did worse on  $O_oVS$  sentences than the other 3 types of sentences and 4 did worse on non-casemarked sentences ( $SO_oV = O_oVS$ ) than overtly casemarked sentences. Of the remaining 3 subjects, one did perfectly well on all 4 sentence types, one made only one mistake (on an  $SO_oV$  sentence), and one made 3 mistakes (one each for  $SO_oV$ ,  $O_oVS$  and  $O_iVS$ ). Taken together, these results indicate that overt casemarking is only necessary for correct interpretation of OVS sentences and not SOV sentences.

Analyses of just the non-casemarked sentences revealed that adults were more accurate for sentences that contained a determiner than those that didn't (84% vs. 69% correct,  $F(1,27) = 24.94, p < .0005$ ). There was a significant interaction between word order and presence of a determiner ( $F(1,27) = 37.96, p < .0005$ ). As shown in Figure 2, adults correctly interpreted  $detO_oVS$  sentences more often than  $O_oVS$  (77% vs. 43%,  $p < .0005$ ), whereas their accuracy was similar for  $SdetO_oV$  and  $SO_oV$  sentences (91% vs. 96%,  $p > .05$ ).

Adults' acceptability ratings generally mirrored their comprehension results. Adults rated SOV sentences more acceptable than OVS sentences, and casemarked sentences more acceptable than non-casemarked sentences (both  $p$ 's  $< .0005$ ). There was also a significant interaction between word order and casemarking ( $p < .0005$ ), with participants preferring  $SO_iV$  sentences (4.21 out of 5) to  $O_iVS$  sentences (3.92), which were in turn preferred to  $SO_oV$  sentences (3.51), which were in turn preferred to  $O_oVS$  sentences (2.88, all  $p$ 's  $< .001$ ). Lastly, participants rated non-casemarked sentences with determiners more acceptable than those that lacked determiners ( $p < .01$ ), with there being no interaction between word order and presence of determiner ( $p > .50$ ).

DISCUSSION. These results indicate that, even in a 'free' word-order language like Turkish, adults rely heavily on the word order when they interpret the meaning of sentences. If a semantically reversible Turkish sentence does not have the default SOV word order, Turkish-speaking adults require other cues to correctly interpret the meaning of the sentence. The second strongest cue is the accusative case, and the weakest cue is the presence of an indefinite object determiner. Our results support linguistic theories that posit that even so-called free word order languages are configurational and have an underlying basic word order. We suggest adults use their knowledge of this word order and the thematic hierarchy to parse sentences. Thus, our results also support psycholinguistic theories that argue that adults sometimes use simple structural heuristics to do a "good enough" parse rather than doing a full structural parse to determine "who did what to whom."

