

Aspects of Italian quantification: an experimental study*

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Abstract

The aim of this work is to investigate, via an experimental task, the accessibility of inverse scope readings in Italian sentences containing two quantifiers: one in subject position and the other in object position.

1. Introduction

English sentences containing two or more quantifiers (QPs), e.g.(1), are said to be ambiguous between the so-called surface scope reading (1a), in which scope corresponds to the visible c-command relation between the QPs, and the inverse scope reading (1b), in which relative scope does not correspond to the observable c-command relations:

- (1) A girl loves every boy.
a. There is a girl who loves every boy.
b. For every boy there is a (possibly different) girl who admires him.

Importantly, scope ambiguities are boosted or restricted by the semantic features of the interacting QPs (Ioup, 1975; Beghelli & Stowell, 1997; Szabolcsi, 1997, 2010, a.o.).

The aim of this work is to investigate the accessibility of inverse scope readings in Italian doubly quantified sentences featuring one QP in subject position and the other in object position, cf. (2):

- (2) Qualche paziente ha consultato ogni medico.
some patients have consulted every physician

This configuration has been compared with a baseline condition in which both QPs appear as complements of the verb, as exemplified in (3):

- (3) Il primario ha assegnato qualche paziente ad ogni medico.
the head physician has assigned some patients to every doctor

2. The experiment

We set up an experiment in which sentences in pairs like (2)-(3) were introduced by a context (which was felicitous for both the baseline and the experimental sentence) and followed by a continuation sentence which was only compatible with the inverse reading:

- (5) Il primario ha assegnato due pazienti a ciascun medico. In tutto, i pazienti visitati sono 20.
The head physician assigned two patients to every doctor. The overall number of treated patients is 20

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Participants were asked to evaluate the naturalness and coherence of the continuation sentence with respect to the preceding one and its context on a 7-point Likert scale (from -3 to +3): the degree of acceptability of the continuation sentence thus manifests the accessibility of the inverse scope reading (cf. Szabolcsi, 2010:88-90 for this methodology).

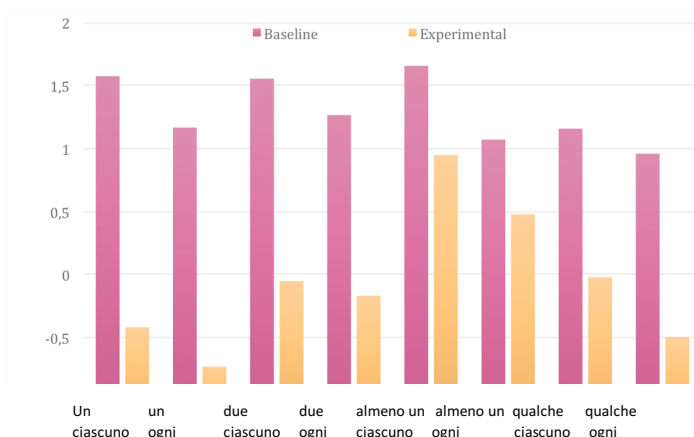
The pairs of QPs that we tested consisted of a quantifier with surface wide scope (Qualche ‘some’, Un NP ‘an NP’, Due NP ‘two NP’, Almeno un NP ‘at least one NP’, Nessun NP ‘no NP’, La maggior parte di DP ‘most of DP’) interacting with one of two universal quantifiers (Ciascun NP ‘each NP’ and Ogni NP ‘every NP’), for a total of 12 conditions. The baseline sentences have the form: Subj, Obj, PP (Object and PP are QPs) while the experimental conditions feature a QP in subject and object position. The PP of baseline sentences and the Object of experimental sentences are always universal quantifiers. These pairs of QPs are scopally non-commutative in the sense of Fox (2000), namely they lead to different truth conditions when interpreted with surface vs. inverse scope.

Eight experimental paradigms were built based on very straightforward lexical choices relying on basic knowledge of the world. Each paradigm contained 12 pairs of interacting quantifiers; from these, 16 different lists were created and tested. The items were alternated with fillers. Participants were recruited with no gender or age restrictions and their judgements were collected via the online software Surveygyzmo.

3. Results and discussion

In general, the baseline sentences performed better than the experimental ones, showing that inverse scope is more accessible when the two QPs are complements of the verb, rather than in subject and object position. The effect of the syntactic position also showed a very significant interaction with the type of interacting QPs:

- (i) concerning the interaction between a weak quantifier and a universal one, a significant difference emerged with the modified numeral *almeno un*, which performed significantly better than the other weak quantifiers in the experimental condition ($p < 0.0001$; the graph below shows median values only).
- (ii) the pairs containing *la maggior parte* ‘most’ and *nessuno* ‘no’ interacting with a universal QP performed worse than the other pairs in both baseline and experimental sentences.



The analysis proposed for the asymmetric (un)availability of the inverse reading in the experimental subject/object condition is based on the following hypotheses:

- (a) in Italian, the preverbal subject position is criterial (Rizzi, 2012) and checks a quantificational feature; after checking, the subject is “frozen” in this high position (cf. Beghelli & Stowell’s, 1997 RefP) and cannot be reconstructed;

- (b) weak QPs introduced by *qualche* and by non-modified numerals (Group QPs in Beghelli & Stowell's terminology) move to the criterial subject position, and are thereby 'frozen' there, outside the scope of the distributive universal QP – whence the unavailability of inverse scope;
- (c) weak QPs introduced by the modified numeral *almeno un* (Counting QPs in Beghelli & Stowell's terminology), which do not introduce a group referent, target a non-criterial subject position (Spec, AgrSP/TP) from which they can be reconstructed in the scope of the distributive universal operator – whence the availability of inverse scope.

Finally, two more results are open to future investigation:

- (d) the interaction of the strong QP *la maggior parte di DP* with a universal QP disallows the inverse reading even in the most favourable baseline condition: this suggests that when the two interacting QPs are both strong, scope reversal is unavailable;
- (e) the interaction of the negative QP *nessun NP* with a universal QP elicited negative judgements in both conditions: this is probably due to the fact that the continuation sentence required a radical revision of the discourse model initially built on the basis of the surface scope relation (Brasoveanu & Dotlačil 2015), cf. (6):

- (6) Nessun paziente ha consultato ogni medico; i medici sono tutti in sciopero. (#every > no)
 no patient has consulted every physician; the physicians are all on strike.

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