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Referential Numerosity and Morphosyntactic Number Agreement: A Psycholinguistic Study on Italian *qualche/alcuni*

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Introduction

The Number value - overtly or covertly expressed on a noun - is crucial to encode the numerosity of the referent. Previous neurolinguistic studies have shown ‘the activation of the right intraparietal sulcus, an area that has been associated with quantity processing, when participants are asked to read pairs of words with Number agreement violations’ (Carreiras et al., 2010: 1741). Such studies seem to point at the fact that the encoding of Number into the language has to deal with a cognitive elaboration of numerosity. Usually, the value of the formal number feature on a countable noun corresponds to the referential numerosity to convey (e.g., a plural number value on the noun corresponds to a plurality concerning the reference). However, it is not always the case that a formal value matches the numerosity of the reference. More in general, mismatches between formal values and the conceptual and referential levels can be detected for other morphological categories (e.g., Gender).

In order to shed light on the correspondence between the formal value(s) for Number and the referential numerosity, we developed a psycholinguistic experiment taking as a testing ground two Italian quantifiers, *qualche* and *alcuni* (Longobardi, 1988; Zamparelli, 2007). Both quantification expressions encode a plural reference with paucal meaning, similarly to English ‘some’ or ‘a few’. Crucially, both of them encode a referential plurality but, for what concerns morphosyntax, *alcuni* agrees with a plural noun, and *qualche* agrees with a singular noun. We considered *qualche* and *alcuni* only in a syntactic position where either of them can be used yielding the same meaning (we did not present them in interrogative sentences or polarity contexts).

Materials and methods

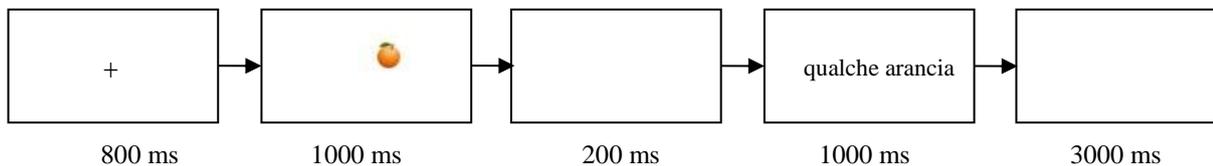
We developed a picture–phrase matching paradigm. 34 subjects were tested (age 21-35, 16 females). We chose 30 countable, concrete nouns, each referring to an object, matched by i) frequency by means of the it-WaC corpus (Baroni et al., 2009), ii) subjective frequency by means of a dedicated rating study, and iii) length. The length and the frequency of the whole phrase *qualche/alcuni* + N were also matched. Two pictures were created for each noun: one representing one object, and one representing the same object repeated four times. Each picture was then paired with both the quantification expressions as shown in table 1. The experimental conditions were 4, for a total of 120 experimental stimuli. 180 filler stimuli were added in order to counterbalance each experimental condition.

Table 1

PICTURE	Q-EXPRESSION	NUMEROSITY ENCODED BY THE QE	MORPHOLOGICAL VALUE	TRUTH VALUE	CONDITION
SINGULAR	<i>qualche</i> + N	plural	singular	F	A
	<i>alcuni/e</i> + N	plural	plural	F	B
PLURAL	<i>qualche</i> + N	plural	singular	T	C
	<i>alcuni/e</i> + N	plural	plural	T	D
SINGULAR	<i>un/uno/una</i> + N	singular	singular	T	filler
	plural bare noun	plural	plural	F	filler
	singular bare noun	singular	singular	T	filler
	<i>un/uno/una</i> + N	singular	singular	F	filler
PLURAL	plural bare noun	plural	plural	T	filler
	singular bare noun	singular	singular	F	filler

The presentation of the stimuli was randomized for each participant. At each trial, the participant was presented a picture, followed by a phrase (figure 1). The participant was asked to press one key if the phrase matched with the picture, and another key in the opposite case. The keys were counterbalanced across the participants.

Figure 1



RTs measurement was triggered at the onset of the phrase. When the numerosity encoded by the Q-Expression matches the morphological number value as in conditions B and D (*alcuni* + N_{plur}) faster RTs are expected, irrespectively of the truth value. Conversely, when the numerosity encoded by the Q-Expression does not match the morphological number value as in conditions A and C (*qualche* + N_{sing}) slower RTs are expected.

Results

The behavioural data confirmed the predictions. An ANOVA was carried out both by subject and by item. A significant main effect $F(1,33) = 57.81$, $p < .001$ was found for Q-Expression: the RTs for conditions with *qualche* + N_{sing} (mean = 868.75 msec; sd = 224.69) were longer than for conditions with *alcuni* + N_{plur} (mean = 816.88 msec; sd = 227.15).

Conclusions

The link between the numerosity of the reference and the morphological formal value expressed with respect to Number may not be univocal. In the case that the morphological feature is semantically interpreted and its value (of singular or plural) is congruent with the numerosity of the reference, the processing is faster.

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