Meaning properties of Greek existential quantifiers affect 'not all' scalar implicatures

Scalar diversity—the variability among scalar categories (quantifiers, verbs, adjectives, etc.) in triggering scalar implicatures (SIs) (van Tiel et al., 2016, i.a.)—has been a central focus in experimental pragmatics, with the existential quantifier *some* being among the best SI triggers. The present paper investigates scalar diversity within the scalar category of Greek existential quantifiers—*orizmena, kapja, merika*—experimentally exploring their ability to trigger the 'not all' SI (see (1)). Our findings show that (i) the three quantifiers do not trigger the 'not all' SI to the same extent, and (ii) meaning-related properties of these quantifiers may modulate the likelihood of SI computation, revealing an interplay between semantics and pragmatics.

Background. *Some* has been a paradigmatic case for SI computation, participating in the lexical informativeness scale <*some, all*> (Horn, 1972). The 'not all' interpretation in (1) is typically derived by negating the informationally stronger scalar alternative *all* via informativity/Quantity-based reasoning (Grice, 1989).

(1) ***Some*** *abstracts were well-written.* ⇝ '**Not all** abstracts were well-written.' ('not all' SI)

Equivalent quantifiers exist across languages (e.g., *quelques, certains* in French; *enkele, sommige* in Dutch), exhibiting varying SI rates: French scalars show similar SI rates (Pouscoulous et al., 2007), whereas Dutch ones differ (Banga et al., 2009), a difference attributed to semantic differences between quantifiers.

Importantly, the Greek quantifiers *orizmena, kapja,* and *merika* exhibit meaning differences that can potentially affect SI derivation (Rachmanis, 2023): (i) the non-specificity component of *kapja*, often conveying ignorance/indifference of number, may weaken SI activation; (ii) the preference of *orizmena* and *merika* for proportional interpretations—hypothesized to be a prerequisite for the SI mechanism to operate—may facilitate SI computation. This is less likely for *kapja*, which more readily receives a non-proportional (cardinal) interpretation.

Present study. To date, no evidence indicates differences across the three Greek existential quantifiers in the extent to which the stronger alternative *all* functions as an active alternative, triggering the 'not all' SI. The present study addresses this gap, extending previous work (Authors, 2025), which showed that all three quantifiers triggered the 'not all' SI but found no evidence for differences in the likelihood/strength of SI computation among them. To examine this, we conducted a coherence judgement task collecting both offline judgements and time measures, aiming to capture subtle differences among quantifiers.

We adopted Breheny et al.'s (2006) context manipulation, which precedes the target sentence containing one of the three quantifiers, see (2). UB contexts make *all* available and relevant, increasing the likelihood of 'not all' SI derivation, whereas LB contexts are neutral, making only the logical, semantic interpretation of the target sentence relevant, without the SI. We also included baseline conditions with *only* in target sentences following UB contexts to serve as a reference for SI interpretations, as *only* semantically encodes the relevant interpretation.

(2) **(a) Upper-bound context (UB)**

O ðiefθindis tu zooloɣiku cipu rotise an ola ta ʎondaria eprepe na emvoliastun.

'The warden of the zoo asked if all the lions needed to be vaccinated.'

(b) Lower-bound context (LB)

O ðiefθindis tu zooloɣiku cipu rotise ti protine o ktiniatros meta ton ɟeniko eleŋxo.

'The warden of the zoo asked the vet what he recommended after the general check-up.'

(c) Target sentence

Emaθe oti o ktiniatros ixe emvoliasi (mono) merika / (mono) orizmena / (mono) kapja apo ta jiondarja.

'He was informed that the vet had vaccinated (only) some of the lions.'

(d) *The rest* sentence

Ta ipolipa itan iði emvoliazmena ce ðen xriazondan kati alo.

'The rest had already been vaccinated and didn't need anything else.'

Participants read the context and target sentence and pressed the space bar to read the *the rest* sentence and rate its coherence as a continuation of the preceding passage on a 1–5 scale (1=very bad continuation, 5=very good continuation). Higher coherence ratings indicate higher likelihood of SI computation. We had 18 test items across 9 conditions, rotated through 9 lists (Latin Square design), interspersed with 24 fillers.

Results & Discussion. Data from 38 Greek native speakers (Figure 1) were collected. An ordinal mixed-effects regression analysis revealed significantly higher coherence ratings for *kapja* and *orizmena* when the *the rest* sentence followed a target sentence in UB vs. LB contexts ($ps<0.01$) indicating a higher likelihood of SI generation in UB contexts. No such effect was observed for *merika* ($p=0.18$).

To further probe differences among quantifiers, reading times for the context sentence combined with the target sentence (click times; Figure 2) were analyzed. A significant difference emerged between *kapja* and *merika,* with the *merika* condition being read faster in LB contexts ($t=-2.04$, $p<0.05$), despite *merika*'s lower frequency. A marginally significant Context effect was observed for *merika* ($t=-1.80$, $p=0.07$), along with a significant interaction: the Context effect was larger for *merika* than for *kapja* ($t=1.99$, $p=0.048$), suggesting a higher likelihood of online SI generation for *merika* compared to *kapja* when processing the target sentence.

Reading times for the *the rest* sentence combined with response times (Figure 3) revealed a significant Context effect for *kapja* ($t=-2.97$, $p<0.01$) and a marginal one for *orizmena* ($t=1.83$, $p=0.07$), but no effect for *merika* ($p=0.31$), aligning with the offline judgement data. Marginal differences between quantifiers were also observed in LB contexts: *kapja* vs. *merika* ($p=0.08$), and *kapja* vs. *orizmena* ($p=0.09$), suggesting a lower tendency to judge the *the rest* sentence as coherent in LB contexts when the target contains *kapja*, plausibly reflecting its weaker association with the 'not all' SI, due to its non-specificity component.

Overall, both *orizmena* and *kapja* are more likely to trigger the 'not all' SI with (UB) contextual support and after processing the *the rest* sentence. In contrast, *merika* is sensitive to contextual support during online processing of the target sentence, biasing toward online SI derivation, but does not show differential SI effects after the *the rest* sentence is read. Our results are consistent with the idea that the non-specificity component of *kapja* weakens SI computation while the preference of *merika* for proportional interpretations strengthens it, providing evidence for a semantics-pragmatics interaction in the online interpretation of Greek existential quantifiers.

References

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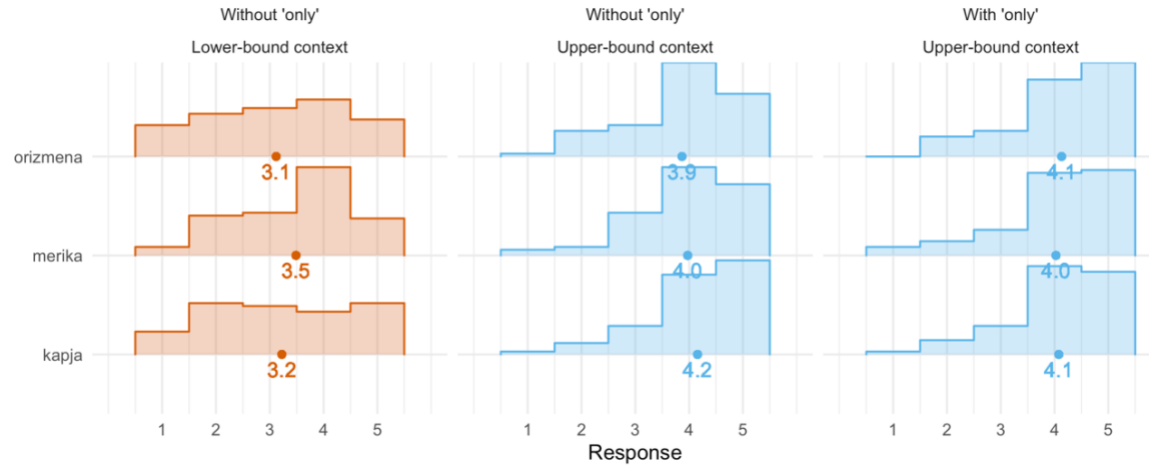

Figure 1: Coherence judgement ratings per condition.

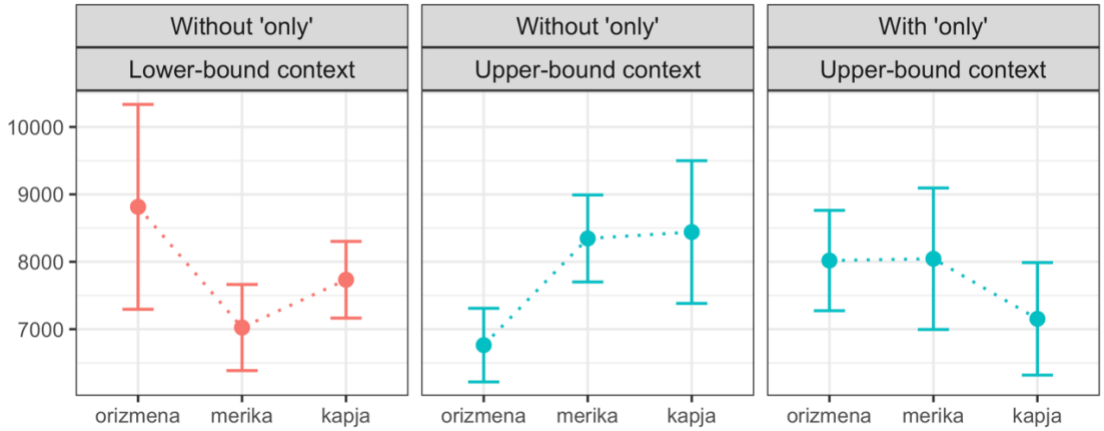

Figure 2: Mean click times per condition.

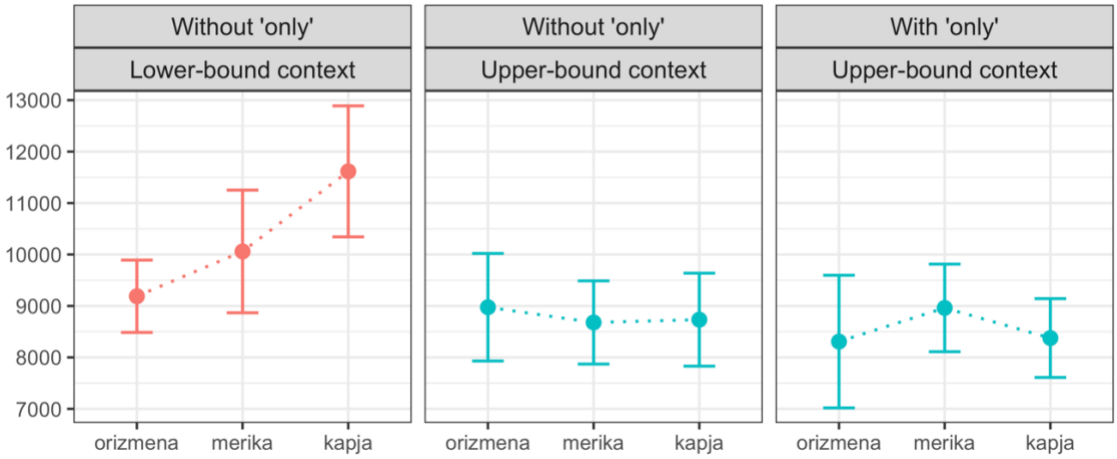

Figure 3: Mean response times per condition.