

## Prosodic Effects on Quantifier Scope Interpretation in Chinese

**Introduction.** The interface between prosody and other linguistic levels has long been a crucial topic to linguistic theory, psycholinguistics, and language acquisition (Bolinger, 1965; Jackendoff, 1972). Quantifier scope, situated at the intersection of syntax, semantics, and prosody, provides a particularly informative testing ground. Previous research has shown that prosody can influence scope interpretation in languages such as English, Russian, and Japanese (Ionin & Luchkina, 2018; Sugawara, 2025; Syrett et al., 2014). Mandarin Chinese is traditionally characterized as scope-rigid (Aoun & Li, 1989), permitting only surface scope interpretations. This raises a key question: whether prosody can modulate quantifier scope interpretation in a language that otherwise lacks scope ambiguity. To our knowledge, this question has not been empirically examined. The present study addresses this gap by investigating prosodic effects on two scope configurations in Chinese: a universal quantifier preceding an existential quantifier (UE) and negation preceding a universal quantifier (NU). While both configurations allow surface and inverse scope interpretations in English, Chinese is assumed to permit only surface scope. We test whether prosodic manipulation can nonetheless influence scope interpretation in these configurations in Chinese.

**Methodology.** We tested 53 native speakers of Chinese recruited from Chinese Mainland. For UE sentences (e.g., Every child climbed a tree), the critical manipulation involved stressing NP2 versus no stress, whereas for NU sentences (e.g., The horse didn't jump over every fence), stress was manipulated on negation versus no stress. We recorded 24 minimal sentence pairs for each configuration. Each auditory sentence was paired with a picture depicting either a surface scope or inverse scope interpretation, yielding 192 sentence–picture items distributed across four lists using a Latin-square design. Each participant completed 48 scope-related experimental trials, an additional 48 trials from a separate experiment, and 24 filler items. Participants rated the sentence–picture match on a 7-point Likert scale. Rating data were analyzed using cumulative link mixed models fitted with the *clmm* () function from the ordinal package in R (Christensen, 2019).

**Results & Discussion.** Descriptive results are shown in Figures 1 (UE) and 2 (NU). In UE, stress selectively affected scope interpretation: stressing NP2 reduced acceptance of inverse scope under surface scope contexts but increased acceptance under inverse scope contexts. In contrast, in NU, stressing negation reduced acceptance of inverse scope interpretations. These patterns were confirmed by the statistical models. Overall, Chinese native speakers were sensitive to prosodic manipulation, particularly in inverse scope interpretations, which are often assumed to be unavailable. The findings underscore the interaction between prosody and semantic interpretation and highlight the importance of prosody in evaluating grammatical representations of quantifier scope. We further found that scope judgments are not categorical across speakers, but instead exhibit graded variability, supporting a gradient view of grammatical representation even in a language often described as scope-rigid. As shown in Figures 3 and 4, which plot participant-level random intercepts from the models, the dispersion of intercepts around zero indicates substantial individual differences in baseline acceptability, with some participants consistently more liberal and others more conservative in their judgments.

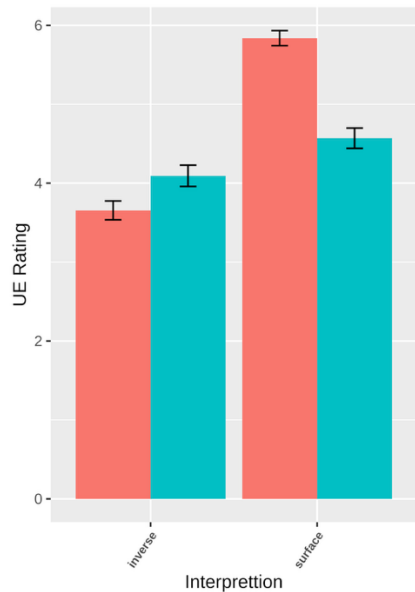


Figure 1. Ratings by condition for UE

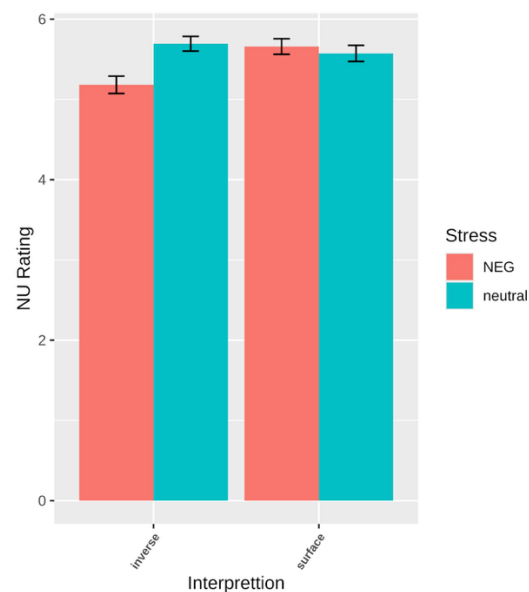


Figure 2. Ratings by condition for NU

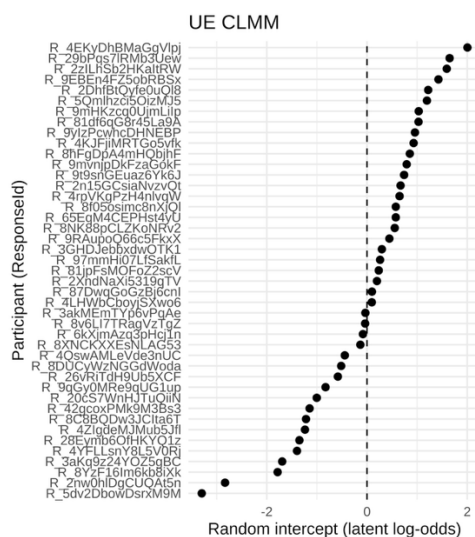


Figure 3. Random intercepts for UE

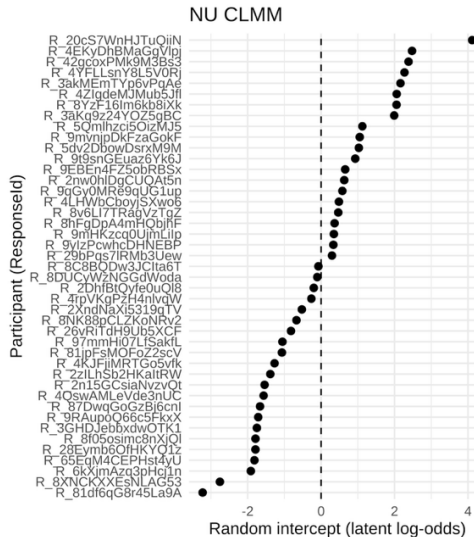


Figure 4. Random intercepts for NU

**Selected references:**

Aoun, J., & Li, Y. H. A. (1989). *Linguistic Inquiry*. Ionin, T., & Luchkina, T. (2018). *Linguistic Inquiry*. Jackendoff, R. S. (1972). *Semantic Interpretation in Generative Grammar*. Sugawara, A. (2025). *Journal of Japanese Linguistics*. Syrett, K., Simon, G., & Nisula, K. (2014). *Journal of Linguistics*