Do nominal modifiers affect bias towards topics? Pronoun interpretation in Mandarin.

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Reduced nominal elements such as pronouns like "she" in (1) are referentially ambiguous and depend on prior context for interpretation, raising the question of how language comprehenders do this. One widespread observation is that pronouns like "she" in (1) often gets interpreted as referring to the first-mentioned NP - the subject - of the antecedent clause ("Anna") ([1],[2],[3]).

(1) Anna telephoned Lisa, and she laughed a lot.

However, the reasons behind this "subject" bias remain unclear. One hypothesis is that grammatical roles influence referential interpretation, with pronouns being more likely to refer to subject because these are the most accessible entities in mental representation (e.g., [1]). But according to the Topicality Hypothesis ([2]), the reason the subject is preferred is due not to its grammatical status but to its discourse status – sentence initial-position is the position for backgrounded NPs (i.e., discourse topics). In a recent production study, Lam & Hwang ([4]) investigated how topicality influences use of referential expressions in Mandarin, with overt vs. null pronouns. The authors asked what mechanisms underpin the relationship between topicality and pronoun production: <u>accessibility</u> (topics are more accessible than non-topics; [5]) and/or <u>predictability</u> (topics are more predictable than non-topics; [6]). Their sentence continuation experiment manipulated topicality via Mandarin word orders, using the topic marker *yinwei*: In prompt sentences (see 2, next page), the subject was either non-initial and therefore non-topical (as in 2b) or left-dislocated and therefore topical (2a). The authors observed an increase in production of null pronouns for topics vs. non-topics, and overt pronouns more frequently referred to non-topic subjects: Topicality increases use of <u>the most reduced NP form</u>. **Our reading comprehension experiment** extends [4] to ask, first whether this topic bias extends to interpretation (cf. [5], [7], [3], [8]). Our second goal is to examine why this bias emerges, by manipulating antecedent complexity. Our hypothesis is that topics might be the preferred referent for a reduced pronoun because topics themselves are usually the most morphologically/prosodically reduced NPs in a sentence ([9]), and this makes them "parallel" ([10]) with a reduced referential form. We manipulate NP complexity using **CL(assifiers)**: small pre-nominal markers which indicate the size, shape, or function of certain nouns such as animals. Our 2x2x2 (within subjs, within items) design crosses presence/absence of CL, topical/non-topical subject, and null/overt pronoun. A sample itemset is shown in Table 1.

Method. The task is to read sentences like in Table 1 (displayed in full on a single screen) and then answer a comprehension question asking the interpretation of the null/overt pronoun in the second conjunct. The question accompanying the conditions in Table 1 is "Who hit the rock?" with three response options of subject, object, and neither: "horse", "donkey", "someone else". We have 24 itemsets (4 lists, Latin square), and 16 filler trials: 8 have intransitive verbs with an animal subject NP, and 8 have transitive verbs, where both the subject and object are human names (i.e., a female subject and male object, or vice versa), with corresponding unambiguous pronouns ("he" or "she"). These serve as attention checks (datasets where participants answer fewer than 6 out 8 correctly will not be analyzed). Presentation order is pseudo-randomized. 64 L1 Mandarin speakers will be recruited from *Prolific* (expected completion: mid-January 2025).

Analysis and predictions. Responses will be coded as 1 when the "subject" answer is chosen, 0 otherwise, and a 2x2x2 logistic mixed-effects regression fit to the data. If effects of topicality are tied to morphological NP reduction, we expect an interaction of topic/non-topic*classifier, with more "subject" responses in the topic condition when the classifier is absent than present, by comparison with the non-topic condition. If effects of topicality supersede morphological reduction, we expect a main effect of topic/non-topic, with more "subject" responses when the antecedent subject is a topic, across-the-board. If effects of topicality are tied to morphological NP reduction, we expect a three-way interaction among topicality, classifier presence, and pronoun type- for null pronouns, with most "subject" responses in the *topical, classifier absent*

condition. Following [4], we also expect a main effect of pronoun type, with null pronouns showing a stronger topic bias, if this interpretative process mirrors production.

(2) Lam & Hwang (2022:6)
  a. Topical Condition

Waner	**yinwei**	darao-le	Meina,	suoyi …
Waner	**because**	bothered	Meina,	so …

"Waner bothered meina, so …"

  b. Non-topical Condition

yinwei	Waner	darao-le	Meina,	suoyi …
because	Waner	bothered	Meina,	so …

"Waner bothered meina, so …"

Table 1. Sample itemset

  A. Topical/non-topical x Classifier present/absent with overt pronoun *"it"/ta*

a. Topical – Classifier present									
yi	pi	ma	**yinwei**	zhuigan	lv,	suoyi	*ta*	zhuangdao-le	shitou.
one	CL	horse	**because**	chase	donkey,	so	*it*	hit	rock
b. Non-Topical – Classifier present									
Yinwei	yi	pi	ma	zhuigan	lv,	suoyi	*ta*	zhuangdao-le	shitou.
because	one	CL	horse	chase	donkey,	so	*it*	hit	rock
c. Topical – Classifier absent									
ma	**yinwei**	zhuigan	lv,	suoyi	*ta*	zhuangdao-le	shitou.		
horse	**because**	chase	donkey,	so	*it*	hit	rock		
d. Non-Topical – Classifier absent									
Yinwei	ma	zhuigan	lv,	suoyi	*ta*	zhuangdao-le	shitou.		
because	horse	chase	donkey,	so	*it*	hit	rock		

"(one) horse chased the donkey, so it hit the rock."

  B. Topical/non-topical x Classifier present/absent with null pronoun ∅

e. Topical – Classifier present									
yi	pi	ma	**yinwei**	zhuigan	lv,	suoyi		zhuangdao-le	shitou.
one	CL	horse	**because**	chase	donkey,	so	∅	hit	rock
f. Non-Topical – Classifier present									
Yinwei	yi	pi	ma	zhuigan	lv,	suoyi		zhuangdao-le	shitou.
because	one	CL	horse	chase	donkey,	so	∅	hit	rock
g. Topical – Classifier absent									
ma	**yinwei**	zhuigan	lv,	suoyi		zhuangdao-le	shitou.		
horse	**because**	chase	donkey,	so	∅	hit	rock		
h. Non-Topical – Classifier absent									
Yinwei	ma	zhuigan	lv,	suoyi		zhuangdao-le	shitou.		
because	horse	chase	donkey,	so	∅	hit	rock		

"(one) horse chased the donkey, so (it) hit the rock."

References: [1] Arnold, 2001, *Discourse Processes*. [2] Gordon et al., 1993, *Cognitive Science*. [3] Rohde and Kehler, 2014, *LCN*. [4] Lam & Hwang, 2022, *Cognitive Science.* [5] Ariel, 1990, *Anaphoric antecedents*. [6] Givon, 1983, Typological Studies in Language. [7] Arnold, 1998. PhD Thesis, Stanford. [8] Liao et al., 2024, *Glossa*. [9] Arnold et al., 2000, *Language*. [10] Chambers & Smyth, 1998, *JML*.