Mandarin Chinese *ma*: Q morpheme, SA intensifier, or PQP?

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Yes-no question marker

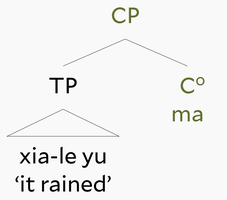
Mandarin *ma* signals yes-no questions:

(1) Xia-le yu.
fall-PFV rain
'It rained.'

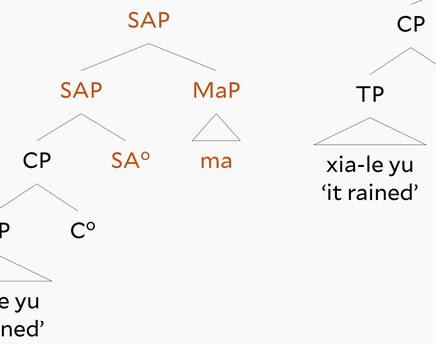
(2) Xia-le yu ma?
fall-PFV rain MA
'Did it rain?'

There have been three theoretical proposals for *ma*:

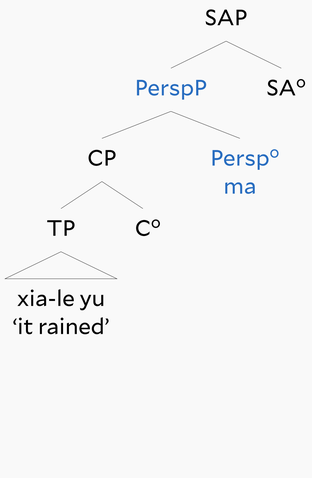
(3) *CP proposal (e.g., Cheng 1991)*
Ma types clauses as [+Q].



(4) *SAP proposal (Kim 2019)*
Ma intensifies speech acts.



(5) ***PerspP proposal*** *(Dayal 2023)*
See below (cf. Woods 2016).



- Experiment results support **a refinement of the PerspP proposal**.
- I show this using **a novel paradigm for eliciting semantic judgments**.

Empirical motivation for PerspP

English embedded inverted questions (EIQs) (McCloskey 2006)

- EIQs ≠ direct quotations: the former allow variable binding (6).
- Unlike rogatives, responsives do not allow EIQs (7).
- Responsives can be shifty: they do allow EIQs under questions (8).

(6) a. [Every male physicist]$_i$ wonders [will he$_i$ be awarded a Nobel Prize]$_\uparrow$. (McCloskey 2006: 89)
b. [Every male physicist]$_i$ wonders, ["Will he$_{j/*i}$ be awarded a Nobel Prize?"]$_\uparrow$

(7) #Sue remembers [was Henry a communist]$_\uparrow$. (Dayal 2023: 20)

(8) Does Sue remember [was Henry a communist]$_\uparrow$? (Dayal 2023: 20)

Persp^0 evolving into *ma*

Lexical differences in responsives (Dayal 2023)

- Unlike *remember*, *forget* allows EIQs in declaratives.
- Relevant distinction for EIQs: *quasi subordinator* (QS) vs. *non-quasi subordinator* (NQS) (≠ rogative vs. responsive).

	QS: $\Diamond\neg\text{know}(x, Q)$	NQS: $\Box\text{know}(x, Q)$
Rogative: [+Q]	*want to know, wonder*	
Responsive: [±Q]	*forget*	*know, remember*

Table 1. Predicates of different types

A QS allows its subject (x) to not know the answer to its complement (Q):

(9) ***Ignorance*** *(9a)* + ***resolution*** *(9b)* ⇝ *EIQ (Dayal 2023)*
a. $[\![\text{Persp}^0]\!] = [\lambda Q.\, \lambda x :\, \Diamond\neg\text{know}(x, Q).\, Q]$
b. A positive answer to the matrix question must lead to a resolution of the embedded question.

New proposal for *ma*: Refined Persp°

(10) ***Ignorance*** + ***knowledge*** ⇝ ma
$[\![\text{ma}]\!] = [\lambda Q.\, \lambda x :\, \Diamond\neg\text{know}(x, Q) \wedge \Diamond\text{know}(\text{addressee}_c, Q).\, Q]$

Novel semantic judgment elicitation paradigm

Experiment setup

The proposals predict different effects of matrix **predicate type** (×2), **illocutionary force** (×2), and **subject person** (×3) on embedded *ma*.

- (2 × 2 × 3) conditions × 4 items = 48 tokens.
- 12 **Beijing Mandarin** speakers (ages 22–24, $\mu = 23.67$) participated.

Forced-choice task

- Choose (b) if the two sentences in (a) can be naturally conveyed using the one sentence in (b) (= **the target sentence**).
- Choose (a) otherwise.

Example stimulus

(11) a. Xiaohong$_i$ xiang zhidao yi jian shi. Na jiu shi ta$_i$ de fenshu shi-bu-shi bi wo$_j$ gao.
'Xiaohong$_i$ wants to know one thing. That thing is whether her$_i$ score is higher than mine$_j$.'
b. Xiaohong$_i$ xiang zhidao, [ta$_i$ de fenshu bi wo$_j$ gao
Xiaohong want know 3SG POSS score than 1SG high ma?]
MA
'Xiaohong$_i$ wants to know, was her$_i$ score higher than mine$_j$?'

Pronoun references were made clear through accompanying contexts.

Predictions and results

Predictions

- CP: *ma* is generally embeddable.
- SAP: *ma*'s embeddability follows the felicity conditions of asking.
- PerspP: *ma*'s embeddability follows (9) and mirrors English EIQs.
- Refined PerspP (RPP): *ma*'s embeddability follows (10).

	CP		SAP		PerspP		RPP	
	QS	NQS	QS	NQS	QS	NQS	QS	NQS
'I …'	1	1	1	0	1	0	1	0
'You …'	1	1	0	1	1	0	0	0
'Xiaohong …'	1	1	1	1	1	0	1	0
'Do I …?'	0	0	0	0	0	0	0	0
'Do you …?'	1	1	0	0	0	1	1	1
'Does Xiaohong …?'	1	1	1	1	0	1	1	1

Table 2. Predictions for *ma*'s embeddability by different proposals

Questioning one's own knowledge state is odd: 'Do I …?' items were fillers.

Results

	QS	NQS
'I …'	**.83**	.02
'You …'	.21	.35
'Xiaohong …'	**.73**	.15
'Do I …?'	.06	.23
'Do you …?'	**.75**	**.77**
'Does Xiaohong …?'	**.67**	**.63**

Table 3. Acceptability rates of embedded *ma* (= proportion of choosing (b))

- The results align best with the RPP proposal.
- Open question: **Why do English EIQs and Mandarin *ma* vary?**
- Hypothesis: different question-asking strategies in competition.

Concluding remarks

- *Ma* is not a Q morpheme or SA intensifier but may be a PQP.
- *Ma* also requires **knowledge** in addition to **ignorance**.

Acknowledgements and selected references

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Dayal, Veneeta. 2023. The interrogative left periphery: How a clause becomes a question. *Linguistic Inquiry*. McCloskey, James. 2006. Questions and questioning in a local English. In Raffaella Zanuttini, Héctor Campos, Elena Herburger & Paul Portner (eds.), *Crosslinguistic research in syntax and semantics: Negation, tense, and clausal architecture*, 87–126. Washington, DC: Georgetown University Press.