



The effect of surface syntactic positions of *wh*-phrases on *wh*-scope

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Background

- It has been reported that the *wh*-phrase in the embedded clause as in (1) is not subject to *wh*-island effect at LF in *wh*-in-situ languages, particularly in Mandarin (Huang 1982: 525-531).

(1) Zhengzhi wen-guo Lisi jian-guo shui?

Zhengzhi ask-Perf Lisi meet-Perf who

a. ‘Did Zhengzhi ask who Lisi met?’(embedded scope)

b. ‘Who did Zhengzhi ask whether Lisi met?’(matrix scope)

Research questions

- a) whether the *wh*-phrase in-situ is scopally ambiguous;
- b) how the surface syntactic position of the *wh*-phrases affects *wh*-scope processing

Experiments

- Experiment 1:
 - examines the existence of the scope ambiguity of *wh*-phrases in an embedded clause.
 - includes a forced choice task and an acceptability judgment task
- Experiment 2:
 - examines whether the changed syntactic positions caused by *wh*-scrambling affect the processing of the semantic scope of *wh*-phrases
 - includes a forced choice task

Experiment 1- Stimuli

- Three control factors:
 - a) The position of *wh*-phrases: subject vs. object in an embedded clause
 - b) The type of *wh*-phrases: regular *wh*-phrases vs. D-linked *wh*-phrases
 - c) The embedded sentence types: default vs. A-not-A
- 4 sets of 8 target sentences (= $2*2*2$)
- 64 target sentences (32 for each task) were randomized with 232 fillers and distributed across 4 sets in a Latin Square Design.

Experiment 1- Procedure

- 71 native Mandarin speakers participated through Qualtrics.
- Forced choice task: they chose one of the two given answers as in (2).

(2) Question: Zhengzhi wen-guo Lisi jian-guo shui?

Answer: a. Shide('Yes') b. Liujun('Liujun')

- Acceptability judgment task: they rated the naturalness of a question-answer pair on a 7-point scale.

(3) Question: Zhengzhi wen-guo Lisi jian-guo shui?

Answer: Liujun('Liujun')

0 1 2 3 4 5 6

(The least natural)

(The most natural)

Experiment 1- Result

- A forced choice task and an acceptability judgment task

	The type of wh- phrases	position	A-not-A	Forced Choice result (Matrix scope answer)	Acceptability judgment result (Matrix scope reading, maximum: 6)
1	Regular wh	Subject	No	50 %	3.1
2	Regular wh	Subject	Yes	57%	2.9
3	Regular wh	Object	No	52%	3.2
4	Regular wh	Object	Yes	45%	2.9
5	D-linking wh	Subject	No	43%	3.1
6	D-linking wh	Subject	Yes	43%	3.1
7	D-linking wh	Object	No	42%	3.5
8	D-linking wh	Object	Yes	35%	2.7

Experiment 1- Result

- The results of the forced choice task show that there exists scope ambiguity in Mandarin. A logistic regression model shows that
 - a) no significant difference between subject and object ($p > .05$, $t < 2$) or between default construction and A-not-A construction ($p > .05$, $t < 2$).
 - b) preference of embedded scope reading for D-linked *wh*-phrases
($p < .05$, $t > 2$)
- For the acceptability judgement task, the difference between the conditions is not significant (linear regression model: $p > .05$, $t < 2$)

Experiment 2 - Stimuli

- *wh*-phrases are allowed to scramble out of their base position.

(4) a. *wh*-in-situ:

[_{Matrix} ... [_{Embedded} ... ***wh*-phrase** ...]] ?

b. *wh* scrambling inside an embedded clause:

[_{Matrix} ... [_{Embedded} ***wh*-phrase**_{*i*} ... *t*_{*i*} ...]] ?

c. *wh* scrambling out of an embedded clause

[_{Matrix} ***wh*-phrase**_{*i*} ... [_{Embedded} ... *t*_{*i*} ...]] ?

Experiment 2- Stimuli

- Three control factors:
 - a) syntactic positions of *wh*-phrases in our stimuli:
 - *wh*-in situ in the embedded clause
 - the left edge of the embedded clause (SDS: short distance scrambling)
 - the left edge of the matrix clause (LDS: long distance scrambling)
 - b) the type of *wh*-phrases: regular *wh*-phrases vs. D-linked *wh*-phrases
 - c) the embedded sentence types: default vs. A-not-A
- 4 sets of 12 target sentences (= 3*2*2)
- 48 target sentences intermingled with 112 fillers were distributed across 4 sets in a Latin Square Design.

Experiment 2- Procedure

- 36 native Mandarin speakers participated through Qualtrics.
- Forced choice task: they chose one of the two given answers as in (5).

(5) Question: Zhengzhi wen-guo shui Lisi jian-guo?

Answer: a. Shide('Yes')

b. Liujun('Liujun')

Experiment 2 - Result

	Matrix scope reading	<i>p</i> -value
<i>wh</i> -in-situ	49%	< .05
SDS	76%	
LDS	94%	

Experiment 2 - Result

- The differences between *wh*-in-situ and SDS and between SDS and LDS were statistically significant (logistic linear regression: $p < .05$).
- The more the *wh*-phrases were scrambled, the higher percentage of the matrix scope reading were found.
- In particular, we could see a very strong preference for the matrix scope reading of the *wh*-phrases (94%) when it is scrambled to the matrix clause (LDS).
- This suggests that syntactic positions of *wh*-phrases have an impact on processing of the semantic scope of *wh*-phrases.

Conclusion

- This study confirms that there is no *wh*-island effect in Mandarin, as argued in Huang (1982).
- It also shows that the processing of *wh*-scope is affected by *wh*-scrambling. In particular, the LDS effect echoes Takahashi (1993)'s claim that the *wh*-phrase in the LDS in *wh*-in-situ languages is analogous with English *wh*-movement such that a matrix scope reading is the only possibility.

Following-up experiments we've conducted

- Production tests and perception tests:
 - a) In order to disambiguate the *wh*-scope, what kind of prosodic strategies will Mandarin speakers utilize in their production?
 - b) Will the same prosodic strategy aid to disambiguate the *wh*-scope when they hear the ambiguous sentences?
 - c) When *wh*-words are scrambled, will the prosody be affected?

References

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Thank you!

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