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Getting aspectual *-guo* under control in Mandarin Chinese: An experimental investigation

1 Background

Mandarin **experiential aspect marker** *-guo* is canonically used to indicate that some eventuality has occurred at least once before (see e.g. Smith 1991; Pan and Lee 2004; Lin 2006):

(1) Lisi he-**guo** jiu.
Lisi drink-EXP wine
'Lisi drank wine before.' (Lin 2006:10)

Some speakers of Mandarin accept *-guo* in **control complements**:

(2) Zhangsan **quan** Lisi [PRO hui(%-**guo**) laojia].
Zhangsan urge Lisi return-EXP home
'Zhangsan urged (persuaded?) Lisi to return home.'

Debate over the status of *-guo* under control:

→ **Non-local** realization of **matrix** aspect (Cheng 1989; Huang 1989; Li 1990; Grano 2012, 2015)
(because Mandarin control clauses are nonfinite or reduced, hence lack a position for aspect)

→ **Local** realization of **embedded** aspect (Xu 1985–1986; Hu, Pan, and Xu 2001)
(Mandarin makes no syntactic distinction between control and non-control clauses)

Xu's (1985–1986) argument against the matrix analysis — An **interpretive contrast**:

(3) Wo qing-**guo** ta [PRO chi fan], keshi ta mei lai.
1SG invite-EXP 3SG eat food but 3SG NEG.PRF come
'I invited him to have a dinner, but he didn't come.'

(4) *Wo qing ta [PRO chi-**guo** fan], keshi ta mei lai.
1SG invite 3SG eat-EXP food but 3SG NEG.PRF come

The data in (3)–(4) suggest that *-guo* in control complements triggers an **actuality entailment** (in the sense of Bhatt 1999; Hacquard 2006); cf. French:

(5) Jane a pu soulever cette table, #mais elle ne l'a pas soulevée.
'Jane was able to lift this table, #but she didn't lift it.' (Hacquard 2006:21)

However, the empirical picture in Mandarin is complicated by two factors:

First, not all Mandarin speakers agree with the judgment in (4), and Li (1990) reports data that directly contradict the relevant generalization:

(6) a. Wo qing ta [PRO chi-**guo** fan], keshi ta bu yuanyi lai.
1SG invite 3SG eat-EXP food but 3SG not willing come
'I have invited him to eat but he was not willing to come.' (Li 1990:38)

b. Wo quan ta [PRO jie-**guo** yan], keshi ta bu ken jie.
1SG urge 3SG quit-EXP cigarette but 3SG not will quit
'I urged him to quit smoking but he will not stop.' (Li 1990:19)

c. Wo bi ta [PRO chi-**guo** yao], keshi ta bu ken chi.
1SG force 3SG eat-EXP medicine but 3SG not will eat
'I forced him to take his medicine but he will not.' (Li 1990:19)

Second, a number of Mandarin speakers we've spoken to report **rejecting** *-guo* under control altogether, **regardless of interpretation**.

This talk: Report of an acceptability experiment that targets two questions:

1. To what extent do Mandarin speakers accept *-guo* in control complements?
2. To what extent does *-guo* in control complements trigger an actuality entailment?

Preview of results: Moderate acceptability, but no evidence of an actuality entailment.

Implication: Insofar as the argument for the **embedded** analysis of *-guo* under control rests on the existence of actuality entailments, the **matrix** analysis seems to be supported. **However**, some of our other experimental findings may challenge the matrix analysis, as well.

2 Design

We constructed sentential stimuli instantiating object control with **3 ASPECT profiles**...

(7) a. Zhangsan quan-**guo** Lisi hui laojia. ←MATRIX -GUO
Zhangsan urge-EXP Lisi return home

b. Zhangsan quan Lisi hui-**guo** laojia. ←EMBEDDED -GUO
Zhangsan urge Lisi return-EXP home

c. Zhangsan quan Lisi hui laojia. ←NO -GUO
Zhangsan urge Lisi return home

...crossed with **2 ACTUALITY profiles** presented as contexts against which the sentences are judged:

HAPPEN:

(8) Zhangsan juede Lisi yinggai hui laojia, danshi Lisi bu xiang hui, **zuizhong Lisi an-zhao-le**.
Zhangsan feel Lisi should return home but Lisi not want return finally Lisi according-do-PRF
'Zhangsan thought Lisi should return home, but Lisi didn't want to. Finally, Lisi did.'

FAIL:

(9) Zhangsan juede Lisi yinggai hui laojia, danshi Lisi bu xiang hui, **zuizhong Zhangsan fangqi-le**.
Zhangsan feel Lisi should return home but Lisi not want return finally Lisi quit-PRF
'Zhangsan though Lisi should return home, but Lisi didn't want to. Finally, Zhangsan gave up.'

3 ASPECT profiles x 2 ACTUALITY profiles = 6 conditions total

Each of the 6 conditions was instantiated using **3 sentence frames**, yielding 18 items total:

(10) a. Zhangsan quan Lisi **hui laojia**. ← SENTENCE FRAME 1
Zhangsan urge Lisi return home
b. Li Laoshi quan Xiao Hua **qu yiyuan**. ← SENTENCE FRAME 2
Li Teacher urge Little Hua go hospital
c. Wang Jingli quan Xiao Liu **xue kai che**. ← SENTENCE FRAME 3
Wang Manager urge Little Liu learn drive car

36 native Mandarin speakers recruited at Chongqing Medical University (aged 18–24; half male, half female) each **rated 6 out of the 18 test items**, plus 30 fillers of similar complexity, **on a 1–5 scale** from least to most acceptable in the provided context. Stimuli were presented to the subjects on a computer screen, one at a time, in a pseudorandomized order.

3 Results and statistical analysis

(11) a. **Hypothesis A:** Mandarin *-guo* under control triggers **actuality entailments**.
b. **Hypothesis B:** Mandarin *-guo* under control does **not** trigger **actuality entailments**.

Idealized predictions of Hypothesis A:

	HAPPEN	FAIL
matrix *-guo*	5.00	5.00
embedded *-guo*	**5.00**	**1.00**
no *-guo*	5.00	5.00

Table 1

Idealized predictions of Hypothesis B:

	HAPPEN	FAIL
matrix *-guo*	5.00	5.00
embedded *-guo*	**5.00**	**5.00**
no *-guo*	5.00	5.00

Table 2

Actual mean results:

	HAPPEN	FAIL
matrix *-guo*	3.72	4.47
embedded *-guo*	**3.30**	**3.27**
no *-guo*	4.22	4.00

Table 3

Mixed linear model statistical analysis:

- Main effect for ASPECT ($p < 0.001$): Dispreference for embedded *-guo* (mean = 3.29) compared to matrix *-guo* (mean = 4.09) and no *-guo* (4.11).
- Interaction between ASPECT and ACTUALITY:
  - matrix *-guo* x FAIL significantly higher than embedded *-guo* x FAIL ($p = 0.002$)
  - no *-guo* x HAPPEN significantly higher than embedded *-guo* x FAIL ($p = 0.032$)
  - no *-guo* x HAPPEN significantly higher than embedded *-guo* x HAPPEN ($p = 0.041$)
- **Crucially**: embedded *-guo* x FAIL is **not** significantly higher than embedded *-guo* x HAPPEN ($p = 1.00$).

4 Discussion

- We see a global **dispreference for embedded *-guo*** compared with matrix *-guo* and no *-guo*.
- But this dispreference is the same **regardless of interpretation**, supporting Hypothesis B (**no actuality entailment**).
- **Remaining puzzle:** The data suggest that although **embedded *-guo*** does not give rise to an actuality entailment, **matrix *-guo*** may in fact give rise to a **failure inference**.
- This split in interpretive behavior between matrix *-guo* and embedded *-guo* may then ultimately support the **local** analysis of aspect under control, although not for the reason originally used to motivate this analysis.

5 Future directions

Notable limitations of this study that could be overcome via future experiments:

- Only one control verb was tested (*quan* 'urge'). Others that could be tested: *qing* 'invite', *bi* 'force', as well as subject-control verbs like *dasuan* 'plan', *jueding* 'decide'.
- Only one aspect marker was tested (*-guo* 'EXP'). Another that could be tested is *-le* 'PFV'.
- The between-subject design obscures any possible dialectal/idiolectal variation among speakers.

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