

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

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Debate persists over the status of experiential aspect marker *-guo* in Mandarin control complements. One view holds that it instantiates non-local realization of matrix aspect, while another view holds that it instantiates local realization of embedded aspect. Proponents of the latter view base their argument in part on data suggesting that unlike what happens when *-guo* attaches to the matrix verb in a control sentence, *-guo* in a control complement triggers an actuality entailment (an entailment that the event described by the embedded clause in fact occurred). In this paper, we report on a sentence acceptability experiment that tests for actuality entailments in sentences with *-guo* embedded in complements to object-control verb *quan* '(try to) persuade'. The results show no statistically significant difference in the acceptability of such sentences as a function of whether the event described by the embedded clause occurred or not, thereby potentially supporting the view that *-guo* in control complements instantiates non-local realization of matrix aspect.

## 0. Introduction

The 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). In (1), for example, it conveys that Lisi has had the experience of drinking wine at least once before.

- (1) Lisi he-**guo** jiu.  
Lisi drink-Exp<sup>1</sup> wine  
'Lisi drank wine before.' (Lin 2006:10)

The starting point for this paper is the observation that some, though not all, speakers of Mandarin accept *-guo* in control complements, as illustrated in (2) for the object-control verb *quan* '(try to) persuade':

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<sup>1</sup> Abbreviations used in glosses in this paper are: Exp = experiential; Neg = negation; Prf = perfective; 1Sg = first-person singular; 3Sg = third-person singular

- (2) Zhangsan quan Lisi [PRO hui(%-guo) laojia].  
 Zhangsan persuade<sup>2</sup> Lisi return-Exp home  
 'Zhangsan persuaded Lisi to return home.'

Debate persists over the status of *-guo* under control. One view, associated with such authors as Li (1985, 1990); Cheng (1989); Huang (1989); Grano (2012, 2015a), holds that, despite surface appearances, *-guo* in sentences like (2) instantiates non-local realization of matrix aspect, because Mandarin control clauses are nonfinite or reduced structurally in a way that precludes local aspect marking. An opposing view, associated with such authors as Xu (1985–1986); Hu, Pan, and Xu (2001), holds that, in accordance with surface appearances, *-guo* in sentences like (2) instantiates local realization of embedded aspect, and that in Mandarin, there is no syntactic distinction between control and non-control clauses; instead, control is a purely lexical semantic phenomenon.<sup>3,4</sup>

Xu (1985–1986), in particular, levels the following argument against the non-local matrix analysis and in favor of the local embedded analysis. Suppose for the sake of argument that the matrix analysis is right. Then, we would expect a control sentence with a (superficially) embedded instance of *-guo* to be semantically identical to a minimal variant in which *-guo* appears overtly in the matrix clause. But this expectation is not met, as evidenced by the following minimal pair:

- (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 (Xu 1985–1986: 349)

The data in (3)–(4) suggest that *-guo* in control complements triggers what is now known in the literature as an *actuality entailment* (in the sense of Bhatt 1999; Hacquard 2006; Giannakidou and Staraki 2013, and others), i.e., an entailment that the event described by

<sup>2</sup> For the rest of this paper, we will follow ordinary practice in glossing *quan* as 'persuade.' But it should be borne in mind that this translation may be misleading, since *persuade* entails intention formation (i.e., *Kim persuaded Sandy to quit smoking* entails that Sandy formed an intention to quit smoking), while the same is not necessarily true of *quan*. Hence a more faithful but also less succinct gloss would be 'try to persuade.'

<sup>3</sup> For Hu, Pan, and Xu (2001), this is part of a broader effort to argue that Mandarin makes no finite/nonfinite distinction. See Lin (2011, 2015) for a recent opposing view and see Grano (2017) for a critical overview of the status of the finite/nonfinite distinction in Mandarin.

<sup>4</sup> Although we will not consider it in what follows, we note that Xue and McFetridge (1996, 1998) propose yet a third view, namely that *-guo* in control complements gives rise to an ambiguity between a matrix construal and an embedded construal.

the embedded clause did indeed occur. This phenomenon has now been well studied for several languages including especially French, where we find examples like the following:

- (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). For example, 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 Neg 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 persuade 3Sg quit-Exp cigarette but 3Sg Neg will quit  
'I persuaded 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 Neg will eat  
'I forced him to take his medicine but he will not.' (Li 1990:19)

A second complication is that a number of Mandarin speakers that we have informally spoken to report that they find *-guo* in control complements altogether unacceptable, regardless of interpretation.

Given this situation, the purpose of this paper is to report on 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?

By way of preview, our findings suggest that *-guo* in control complements is moderately acceptable. But there is no evidence that they trigger an actuality entailment. Insofar as the argument for the local embedded analysis of *-guo* under control rests on the existence of actuality entailments, our experimental findings support the non-local matrix analysis.

The rest of this paper is organized as follows. Section 1 lays out the design and methods of our experiment. Section 2 documents the results and their statistical analysis. In section 3, we discuss the results, and in section 4 we discuss some notable limitations of our experimental design that could be overcome via future experiments.

### 1. Experimental design and methodology

We constructed sentential stimuli instantiating the object control verb *quan* 'persuade'.<sup>5</sup> The crucial factor that we manipulated in the sentences was whether they contained a matrix instance of *-guo*, an embedded instance of *-guo*, or no aspectual marking at all, as exemplified in (7a–c) respectively.

- (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

Each sentence was judged against one of two contexts, one in which the event described by the embedded clause occurred and one in which it did not occur. For example, the contexts against which each of the sentences in (7) were judged were (8) (exemplifying what we call a 'Happen' context) and (9) (exemplifying what we call a 'Fail' context).

(8) 'Happen' Context:

Zhangsan juede Lisi yinggai hui    laojia, danshi Lisi bu xiang hui,    **zuizhong Lisi**  
 Zhangsan think Lisi should return home but    Lisi not want return finally    Lisi  
**zhao-zuo-le.**  
 according-do-Prf  
 'Zhangsan thought Lisi should return home, but Lisi didn't want to. Finally, Lisi did.'

(9) 'Fail' Context:

Zhangsan juede Lisi yinggai hui    laojia, danshi Lisi bu xiang hui,    **zuizhong**  
 Zhangsan think Lisi should return home but    Lisi not want return finally  
**Zhangsan fangqi-le.**  
 Zhangsan quit-Prf  
 'Zhangsan thought Lisi should return home, but Lisi didn't want to. Finally, Zhangsan gave up.'

Three aspectual conditions (matrix *-guo*, embedded *-guo*, and no *-guo*) crossed with two contextual conditions (Happen and Fail) yield a total of six conditions. Each of the six

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<sup>5</sup> The protocol for the experiment described here was granted Exempt status by the Indiana University Human Subjects office on June 6, 2017 (Protocol #1705435025, Thomas Grano, PI, and Yiwen Zhang, co-PI).

conditions was instantiated using the three sentence frames shown in (10), yielding a total of 18 items.<sup>6</sup>

- |   |                  |
|---|------------------|
| (10) a. Zhangsan quan    Lisi <b>hui</b> <b>laojia</b> .              | Sentence frame 1 |
| Zhangsan persuade Lisi return home                                    |                  |
| b. Li Laoshi    quan    Xiao Hua <b>qu</b> <b>yi</b> <b>yuan</b> .    | Sentence frame 2 |
| Li Teacher persuade Little Hua go hospital                            |                  |
| c. Wang Jingli    quan    Xiao Liu <b>xue</b> <b>kai</b> <b>che</b> . | Sentence frame 3 |
| Wang Manager persuade Little Liu learn drive car                      |                  |

36 native Mandarin speakers (aged 18–24; half women and half men) were recruited at Chongqing Medical University, and each rated six of the 18 test items, in addition to 30 fillers of similar complexity but with different main verbs and different embedded verb phrases. The ratings were done using a 1–5 scale from least acceptable 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.

## 2. Results and statistical analysis

To help contextualize the results and statistical analysis, we begin by articulating two competing hypotheses that our experiment was designed to tease apart:

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

The predicted experimental results associated with these two hypotheses are as follows. Both hypotheses predict that control sentences with matrix *-guo* and control sentences with no *-guo* should be equally acceptable regardless of whether the event described by the embedded clause occurred or not. When it comes to sentences with embedded *-guo*, on the other hand, Hypothesis A predicts that they should be rejected just in case the event described by the embedded clause failed to occur, whereas Hypothesis B predicts that they should be equally acceptable regardless of whether the event described embedded clause occurred or not. (We assume here for the sake of contrasting the two hypotheses that embedded *-guo* sentences are in principle acceptable, although as stated in the Introduction we are also interested in the general acceptability of embedded *-guo* sentences and this is another question that our experiment targets.) With that in mind, the mean results of the experiment are indicated in Table 1.

<sup>6</sup> In order to avoid excessive repetition of the same proper names, two sets of names were constructed for each sentence frame: in half of the conditions, the names were those illustrated in (10): *Zhangsan/Lisi*, *Li Laoshi/Xiao Hua*, and *Wang Jingli/Xiao Liu*. In the other half, the names were changed to *Lao Wu/Xiao Fei*, *Lin Jie/Jia Hui*, and *Xu Zhuren/Xiao Wei*, respectively.

	Happen	Fail
matrix <i>-guo</i>	3.72	4.47
embedded <i>-guo</i>	3.30	3.27
no <i>-guo</i>	4.22	4.00

Table 1: Mean results

A mixed linear model statistical analysis reveals a main effect for aspect placement ( $p < 0.001$ ), manifest as a dispreference for embedded *-guo* (mean = 3.29) compared to matrix *-guo* (mean = 4.09) and no *-guo* (mean = 4.11). This analysis also reveals a significant interaction between aspect and context. Crucially, however, embedded *-guo* in the Fail condition is not significantly higher than embedded *-guo* in the Happen condition ( $p = 1.00$ ), consistent with Hypothesis B but not with Hypothesis A. Instead, the interaction between aspect and context is manifest in the following three ways. First, matrix *-guo* in the Fail condition is significantly higher than embedded *-guo* in the Fail condition ( $p = 0.002$ ). Second, no *-guo* in the Happen condition is significantly higher than embedded *-guo* in the Happen condition ( $p = 0.041$ ). Third, no *-guo* in the Happen condition is significantly higher than embedded *-guo* in the Fail condition ( $p = 0.032$ ). We also note that matrix *-guo* in the fail condition is not significantly higher than matrix *-guo* in the happen condition ( $p = 0.1555$ ); in other words, the difference between the means 3.72 and 4.47 seen in the first row of Table 1 — although it may seem sizable — fails to reach statistical significance.

### 3. Discussion

As stated in the Introduction, the first question that our experiment aimed to answer was: to what extent do Mandarin speakers accept *-guo* in control complements? Our results and statistical analysis reveal that there is a global dispreference for *-guo* in control complements, in comparison with minimally different sentences in which *-guo* appears in the matrix clause or not at all.

The second question that our experiment aimed to answer was: to what extent does *-guo* in a control complement trigger an actuality entailment? Our results and statistical analysis reveal no significant difference in the acceptability of control sentences with embedded *-guo* as a function of whether or not the event described the embedded clause occurred or not. In other words, we failed to find evidence that *-guo* in control complements triggers actuality entailments. These results thereby seem to support the non-local matrix analysis of Mandarin aspect under control, which predicts no interpretive difference between matrix and embedded placement of aspect marking in control sentences. Due to limitations in the design of our experiment (described in section 4 below), we cannot conclude decisively from this that *-guo* under control *never* triggers actuality entailments; instead we view this experiment as a first step in being able to draw more general conclusions about the interpretive effects of *-guo* under control.

#### 4. Future directions

We close by mentioning three notable limitations of our study that could be overcome via future experiments. First, we only tested one control verb, namely *quan* 'persuade.' So, this is the only verb that we can draw conclusions about. Other (object-)control verbs that would be worth testing include *qing* 'invite' and *bi* 'force,' as well as verbs such as *dasuan* 'plan' and *jueding* 'decide,' which differ both in being subject-control verbs rather than object-control verbs and in being disyllabic rather than monosyllabic.

Second, the only aspect marker that we tested was the experiential aspect marker *-guo*. Other aspect markers that could be tested include the verb-final perfective marker *-le*, as well as the durative marker *-zhe*, which also appear in control complements under some conditions, as documented by Grano (2015b). These stand in contrast with the preverbal negative perfective marker *mei(you)* and the preverbal progressive marker *(zheng)zai*, both of which seem to be categorically unacceptable in control complements (on the latter, see Grano, this volume).

Third, the design of our experiment prevents us from investigating dialectal or idiolectal variation among speakers. Given the disagreements in judgments discussed in the Introduction, it seems highly plausible that there is grammatical variation among speakers of Mandarin Chinese with respect to the behavior of aspect marking in control complements, and future experiments could be developed with the aim of testing for such variation.

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