Replicating Acceptability Judgments from Syntax Papers in Chinese

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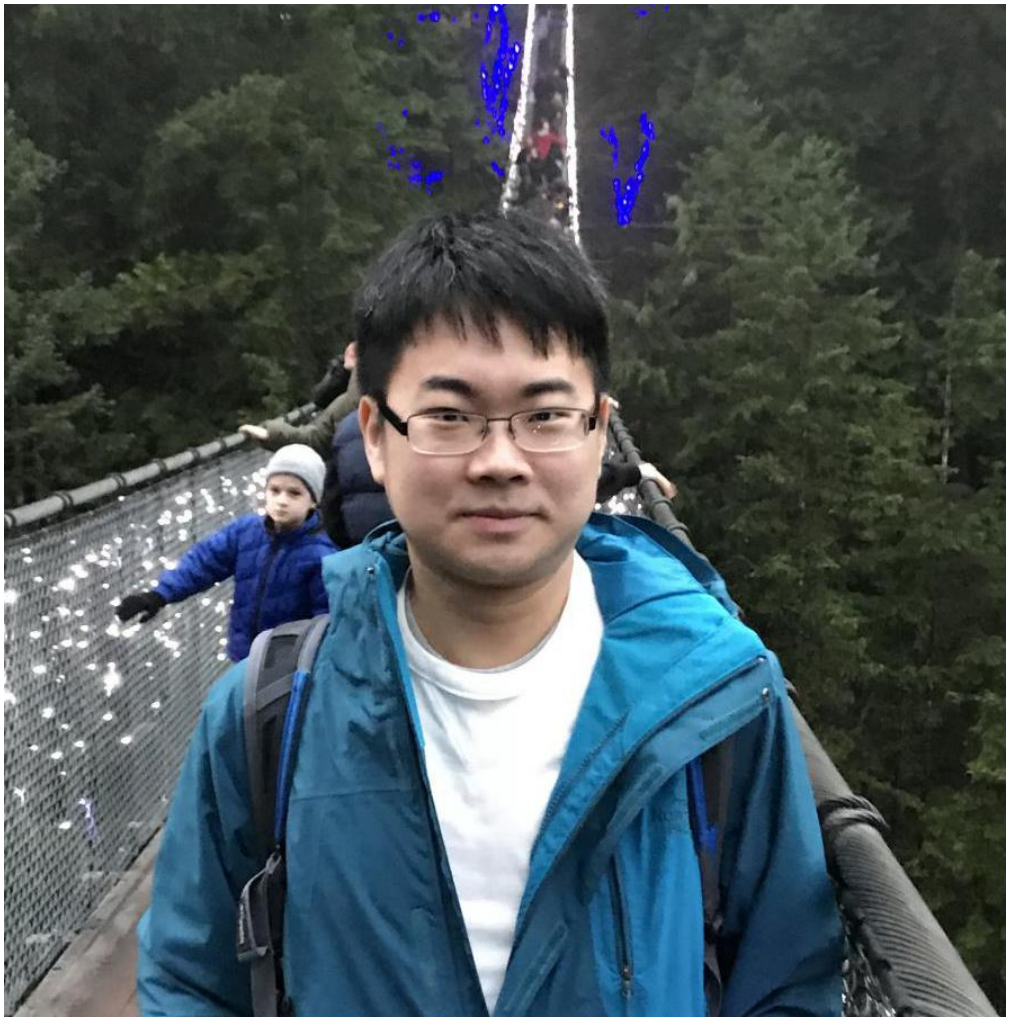
Dedicated to our dearest friend: Jiahui Huang



Background

- Much work has been done to examine whether the informal grammatical judgments in syntactic research can be replicated under experimental settings:

  - Sprouse et al (2012, 2013):
    - Acceptability judgments in **English** in syntax **textbook** (Adger 2003) and **journal** (LI) are valid and robust under more formal experimental settings
  - Chen et al (2020)
    - Acceptability judgments in **Chinese** in syntax **textbook** (Huang et al 2009) are valid and robust under experimental setting: convergence rate = 89.2%

The current study

- This study conducts a large-scale acceptability judgment experiment using sentences randomly sampled from academic **journal articles** on Chinese syntax.

- Research question

  Whether the informal grammatical judgments from journal papers on Chinese syntax can be replicated under a formal experimental setting?

(we use “grammaticality” and “acceptability” interchangeably)

Method

- **Obtaining our stimuli: data sampling**

Goals: wide coverage; primarily on a topic in syntax; minimal pairs

1. Select journals
    a. Peer-reviewed, high-quality, publish papers on Chinese syntax
    b. → 10 journals (wide coverage)
2. Find papers on Chinese syntax 2010-2020
    a. Standard Mandarin Chinese; not dialect; not archaic Chinese
    b. → 128 papers → sample → 68 papers
3. Find ungrammatical sentences
    a. Copy all examples (incl. footnote) to excel sheet → 7261 examples
    b. Sample 6 ungrammatical examples per paper → 397 sentences
4. Find minimal pairs
    a. Find/construct minimal pair
    b. Remove examples involving: anaphora, interpretation, prosody
    c. → 337 pairs

Method

- **Stimuli for judgment**

337 minimal pairs, 92 w/ constructed control sentence

journal	language	n papers	n sents	n pairs
Concentric: Studies in Linguistics	English	5	38	19
J of Chinese Ling	English	6	70	35
J of East Esian Ling	English	6	52	26
Linguistic Inquiry	English	5	48	24
Language & Linguistics	English	6	62	31
Lingua Sinica	English	6	66	33
Natural Lang and Ling Theory	English	6	58	29
Taiwan Journal of Linguistics	English	7	72	36
语言科学	Chinese	10	102	51
中国语文	Chinese	11	106	53
sum		**68**	**674**	**337**

Authors from mainland China, Taiwan, Hong Kong and elsewhere

In sum, representative samples

Method

- **Judgments collection**

- 674 sentences → randomly split into 6 lists
- No pair had both sentences in the same list, i.e., the grammatical and ungrammatical sentences for one pair will be in two different lists
- Online questionnaire distributed using Qualtrics
- Two catch trials interspersed in each list (Chen et al 2020)

    e.g., 这道题请直接选择3这个选项

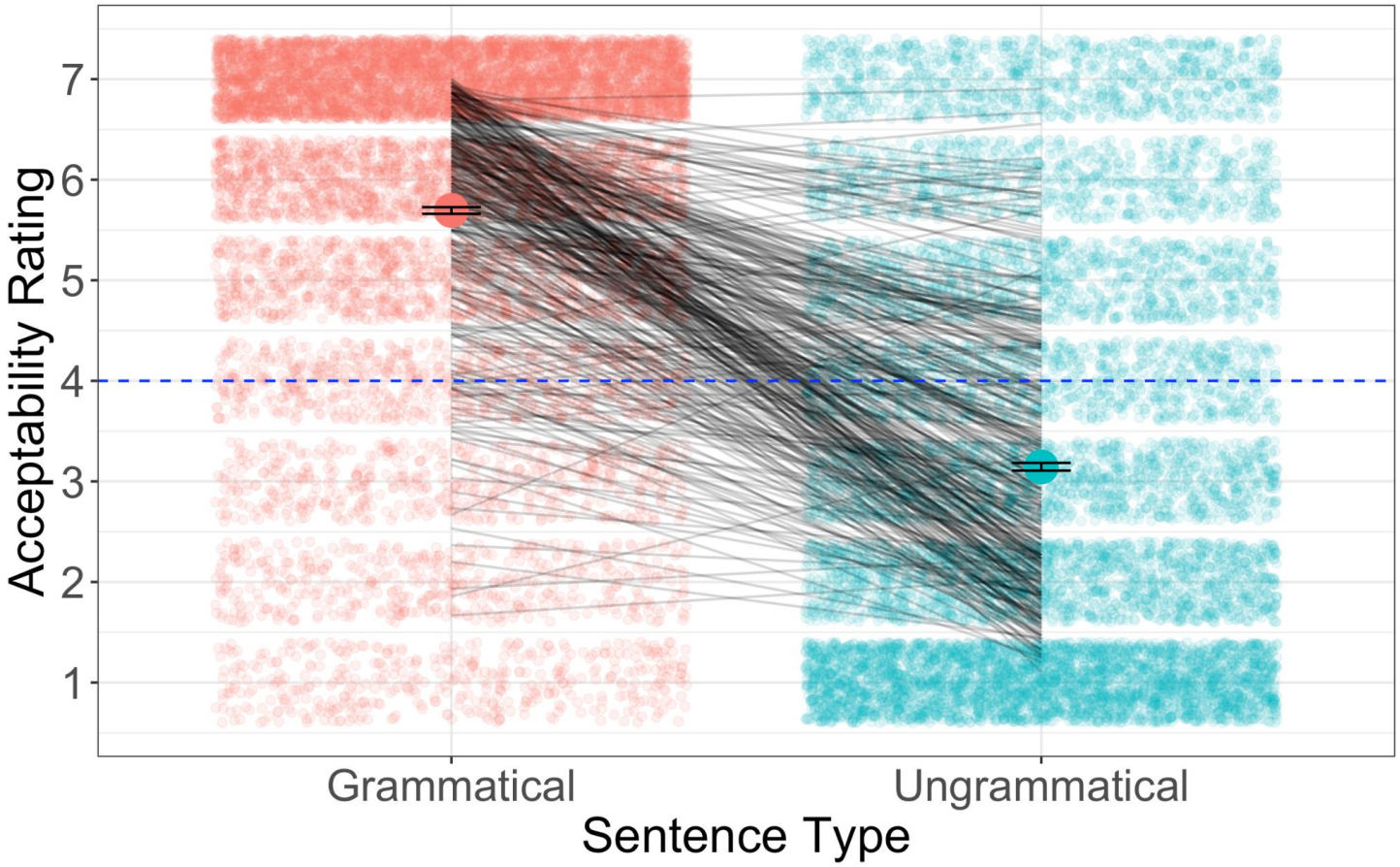
Method

- **Participants**

- 223 native speakers of Mandarin Chinese (Beijing Mandarin) were recruited to rate the naturalness of the sentences on a 7-point Likert scale
- Each participant was randomly assigned to one list
- 36 were excluded due to
  - completion time less than 5 minutes
  - failure to correctly answer the catch trials
  - spent more than 2 years outside BJ before age 18
- 187 participants included for statistical analysis
  - 142 female, 45 male, mean age=22, sd = 5.37

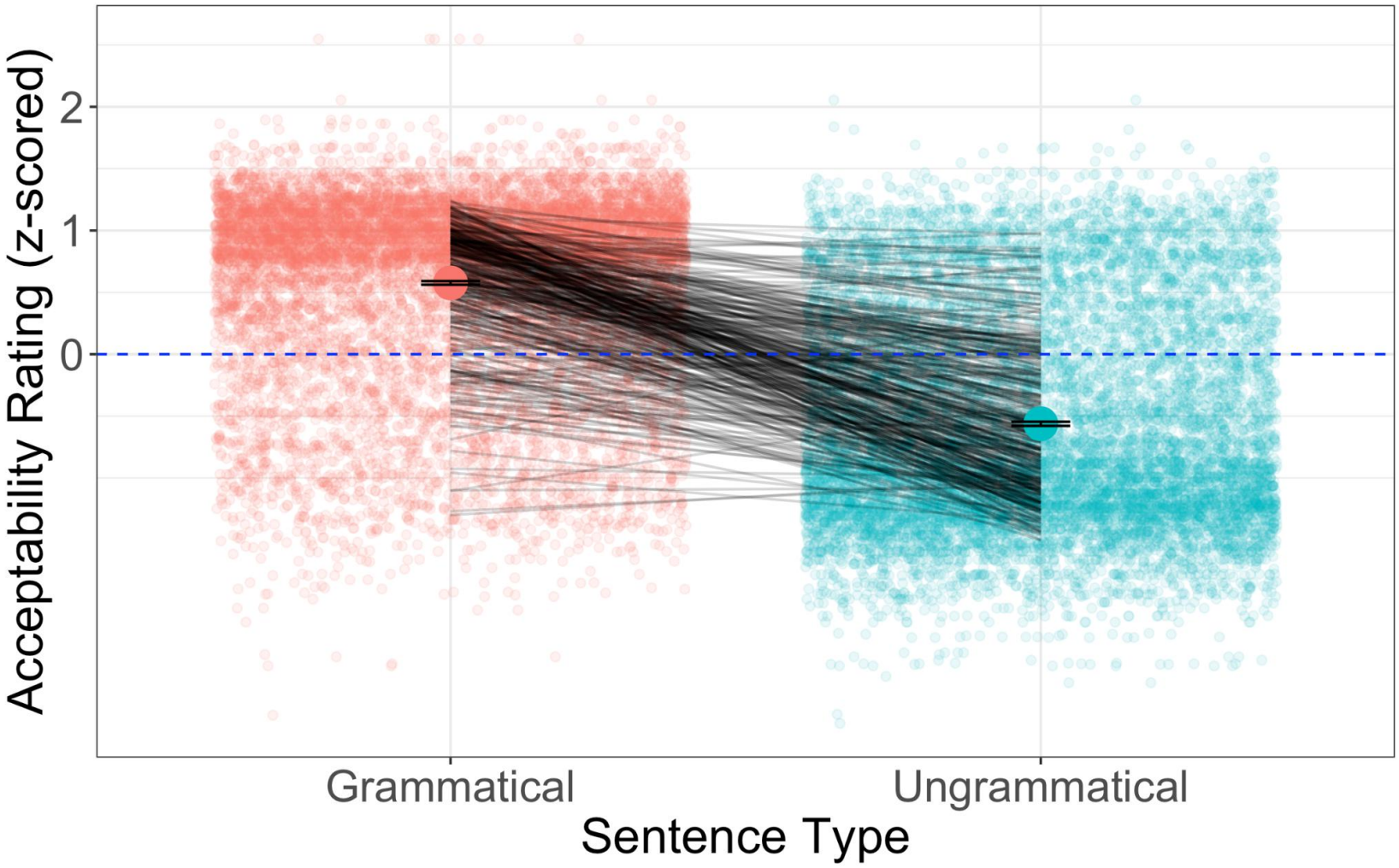
Results: mean rating

- Mean acceptability rating (raw scores)
- Grammatical sentences: 5.69
- Ungrammatical sentences: 3.14



Results: z-score transformed

- Mean acceptability rating (z-score)



Results: regression model

- A linear mixed-effects regression model was fit to the data

- Ratings_z ~ gram + (gram|participant) + (gram|item)

- Dependent variable: ratings (z-score transformed)
- Independent variable: original paper grammaticality judgement
- Random slopes: grammaticality by participant, grammaticality by item
- Ungrammatical items were rated significantly lower (β = -1.14, $P < 0.001$)

Results: t-tests

- Two-tailed paired t-tests for each pair
- **289 / 337 pairs replicated**
  - i.e., grammatical sentences rated significantly higher than ungram.
- 48 / 337 not replicated, 3 categories:
  - Grammatical < ungrammatical (sig): 4 pairs
  - Grammatical < ungrammatical (nonsig): 16 pairs
  - Grammatical > ungrammatical (nonsig): 28 pairs
- Convergence rate = 289/337 = 85.8%
  - c.f., 89.2% in Chen et al (2020)

Results

- Which pairs are not replicated?
- Go over all 337 pairs and found 32 pairs that are open to different interpretations or problematic (might be excluded)
  - *他居然给我们喝了三瓶酒 vs. 他居然给我喝了三瓶酒 (ambiguity)
  - *他认真的回 vs. 他认真的爬 (wrong spelling)
- Within 48 non-replicated pairs, 8 of them are in this category
- New convergence rate = (305-40)/305 = 86.9%
- Now, let's look at those non-replicated pairs!

Results

1. Grammatical < ungrammatical: sig (4 pairs), p-threshold = 0.05

Pair_id	Sentence	Journal	Gram	Mean Rating
12	谁，你认识，而谁，你又不认识？	CSL	g	4.4
12	什么东西你买了，什么东西还没买？	CSL	u	5.7
125	你吃这双筷子吧！	LL	g	1.9
125	你吃这把叉子吧！	LL	u	3.3
254	中国古代从来防止人口流动。	yykx	g	2.7
254	中国古代从来没有防止人口流动。	yykx	u	5.1
272	一个日本军官比比划划地讲着日本话。	yykx	g	5.3
272	一个日本军官比比划划地在讲什么？	yykx	u	5.9

Reminder: each sentence rated by at least 30 participants.

Results

2. Grammatical < ungrammatical: not sig (16 pairs)

Pair_id	Sentence	Journal	Gram	Mean Rating
19	他知道了你一直不肯告诉我的，我昨天自己听到的那个消息。	JCL	g	4.1
19	他知道了邓小平逝世，探险家抵达南极的消息。	JCL	u	4.8
25	我被批评了。	JCL	g	6.8
25	我被表扬了。	JCL	u	6.9
186	那只狐狸已经跑得我筋疲力尽了，可我还是追不上它。	NLLT	g	3.8
186	那只狐狸已经把我跑得筋疲力尽了，可我还是追不上它。	NLLT	u	4.8

Results

3. Grammatical > ungrammatical: not sig (28 pairs)

Pair_id	Sentences	Journal	Gram	Mean Rating
20	那个谣言是他已经病死了。	JCL	g	5.5
20	那个谣言是到处流传的。	JCL	u	4.7
23	这是你私自对那件事的批评。	JCL	g	3.7
23	这是你对那件事的私自批评。	JCL	u	3.1
60	张三看到某人，但我不知道是谁。	JEAL	g	4.3
60	张三看到某人，但我不知道谁。	JEAL	u	4.1
96	他写过一本书很有意思。	LI	g	6.0
96	他写过本书很有意思。	LI	u	5.0

Conclusion and future work

- In general, judgments in academic papers on Chinese syntax can be replicated under experimental setting.
- Age and BJ-Mandarin might play a role.

For the future

- A forced choice task to check whether the non-replicated pairs can be replicated.
- Looking at the effects of other factors.

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Thank You!
Questions and comments are welcome!