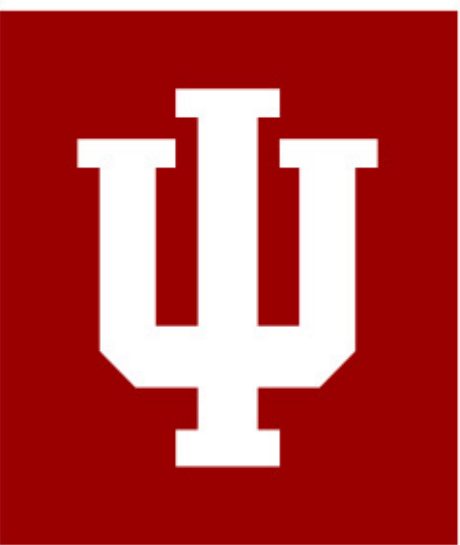


Greater prediction error does not lead to better syntactic adaptation: Evidence from Chinese ambiguity resolution



Zeping Liu, Chien-Jer Charles Lin, Indiana University

Introduction

Syntactic adaptation: To adopt the syntactic patterns from linguistic environment in language comprehension and production

Mechanism: Error-based implicit learning account postulates that larger prediction error experienced in the language processing leads to larger adjustment [1]

Evidence: Reduced garden path effect after repeated exposures to the intended parsing in structurally ambiguous sentences [2-3]

Motivation of this study: Not well-replicated in subsequent studies using the same design [4-6]

Research Question

Whether syntactic adaptation exists in processing structurally ambiguous $V+N1+DE+N2$ fragments in Chinese

- Is there a facilitation effect for the dispreferred analysis (CC) after syntactic exposure to:
 - Weakly RC-biased ambiguous fragments with small prediction errors (Exp.1)?
 - Strongly RC-biased fragments with greater errors (Exp.2)?
- Whether the original parsing preference (RC analysis) still holds?

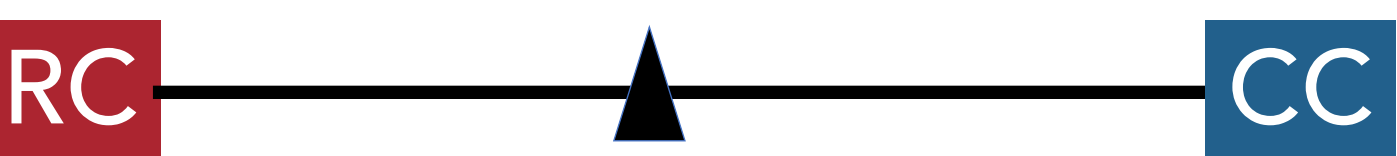
V+N1+DE+N2

Relative Clause (RC) - Preferred Complement Clause (CC) - Dispreferred

Non-cumulative self-paced reading task

	Exposure Group (Exp.1 N=44; Exp.2 N=41)	Control Group (Exp.1 N=44; Exp.2 N=41)
Block 1	16 CCs (8 ambiguous) + 16 fillers	32 fillers
Block 2	10 CCs (5 ambiguous) + 20 fillers	
Block 3	10 RCs (5 ambiguous) + 15 fillers	

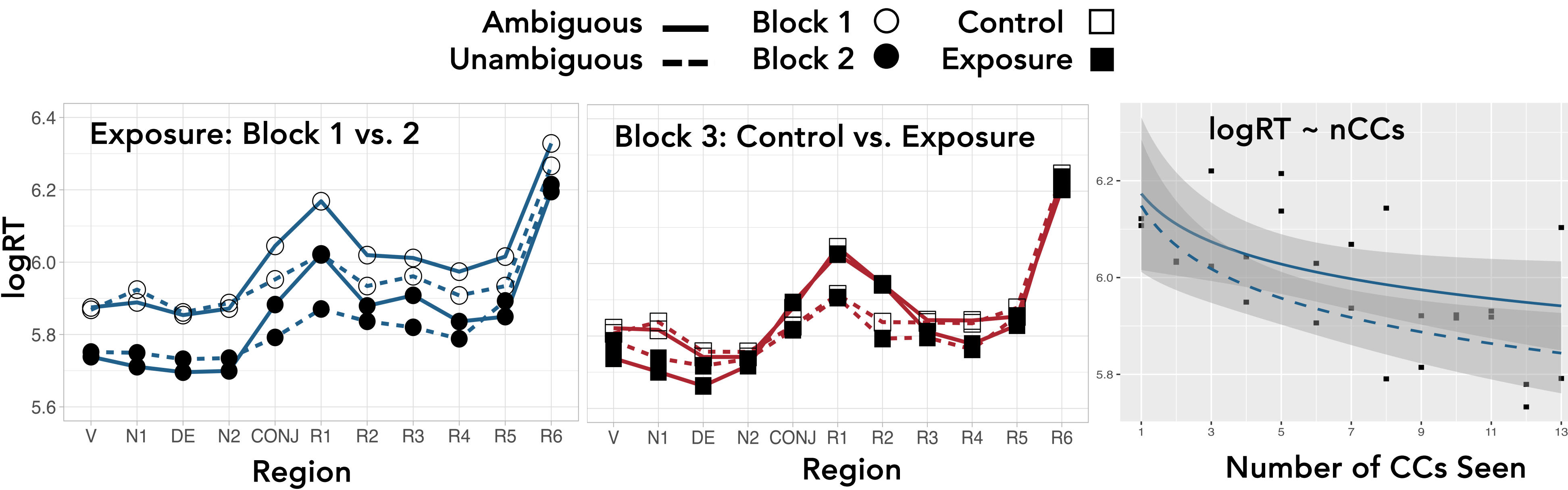
Exp.1: Weakly RC-biased



Anwei bingren DE jia shu ...
comfort patient DE family member

zouhou, na-ge hushi ...
walked away, that-CL nurse
After the family member who comforted the patient left, the nurse ...

zhihou, na-ge hushi ...
after, that-CL nurse
After comforting the patient's family member, the nurse ...



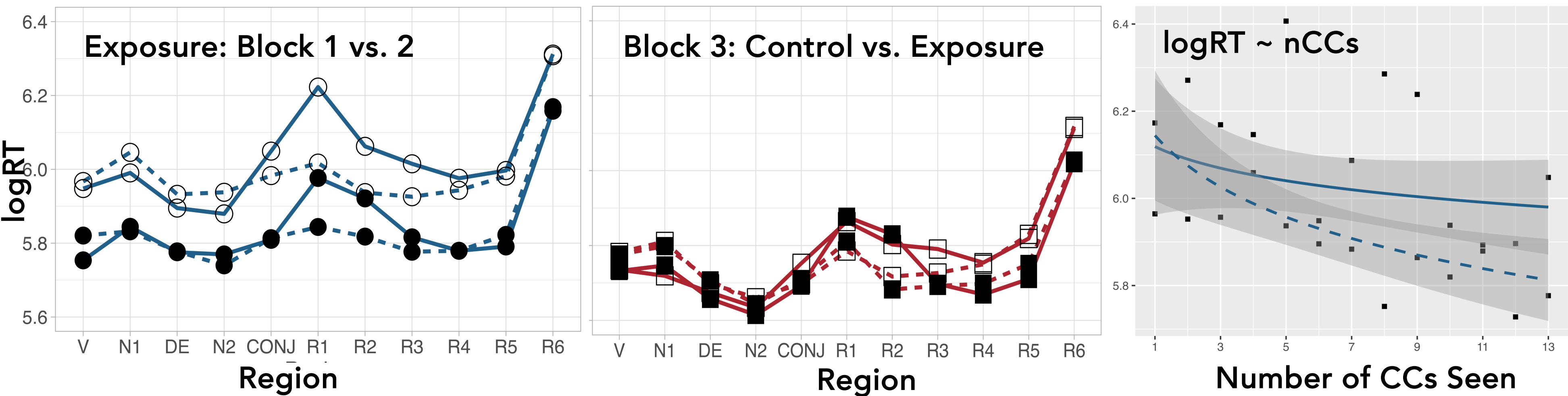
Exp.2: Strongly RC-biased



Nuedai haizi DE baomu ...
abuse child DE nanny

zouhou, na-dui fuqi ...
walked away, that-CL couple
'After the nanny who abused the child left, the couple ...'

zhihou, na-dui fuqi ...
after, that-CL couple
'After abusing the child's nanny, the couple ...'



Findings

Exp. 1 & Exp. 2

No evidence showing that the syntactic exposure promoted the secondary CC parse and inhibit the dominant RC parse [4-6], but note the issue of low statistical power [7]

Exp. 1 vs. Exp. 2

Larger ambiguity effect (Block 1, R1 region) in Exp. 2 (154 ms) than in Exp. 1 (109 ms)

Greater facilitation effect (Block 1 to Block 2) for CC parse in Exp. 2 than in Exp. 1 ($estimate = -0.08$, $SE = 0.01$, $t = -6.62$)

Conclusion

The errors arising from parsing Chinese RC/CC ambiguity in a dispreferred way is not sufficient for the parser's syntactic alignment (Exp.1), even if a larger prediction error is created (Exp. 2) [8-9]

References

- [1] Chang, et al., 2006. *Psychological Review*.
- [2] Fine et al., 2013. *PLoS ONE*.
- [3] Yan & Jaeger, 2020. *LCN*.
- [4] Harrington Stack et al., 2018. *Memory & Cognition*.
- [5] Dempsey et al., 2020. *JEP*.
- [6] Xiang & Xu, 2021, *CUNY*.
- [7] Prasad & Linzen, 2021. *JEP*.
- [8] Kaan et al., 2018. *Applied Psycholinguistics*.
- [9] Hopp, 2020. *Applied Psycholinguistics*.



Questions?
zepliu@iu.edu

AMLAP 2023
San Sebastian, Spain
Aug 31st – Sept 2nd