Supporting Information for: Wei, H., Boland, J. E, Zhang, C., Yang, A., & Yuan, F. (2023). Lexically independent structural priming in second language online sentence comprehension. Article accepted in *Language Learning* on 5 April 2023.

Appendix S1: Experimental Items

Experiment 1

The stimuli for Experiment 1 are provided below in the condition NP1 = AdjP, NP2 = AdjP. The other conditions can be constructed by re-organizing the syntactic structure of the relevant noun phrases. For instance, for item 1, the condition NP1 = RC, NP2 = RC would be: *A quiz that was challenging to pass and a problem that was simple to grasp were solved by Bill.*

1. A challenging to pass quiz and a simple to grasp problem were solved by Bill.
2. A difficult to cure disease and an impossible to implement policy caused big trouble for that country.
3. A clear to understand lecture and a pretty to sing song were recalled by Thomas.
4. An impossible to drive car and a tiresome to clean house were sold by Hubert.
5. A depressing to tell story and a touching to remember event were narrated by Maria.
6. A difficult to convince student and a hard to please professor had a heated debate.
7. A simple to check map and an interesting to read magazine were praised by Georgia.
8. A good to learn language and an easy to cook dish were recommended by Larry.
9. An unpleasant to remember fact and a painful to confess sin had been troubling Jill.
10. A sad to tell story and a painful to describe experience inspired Helen to write the novel.
11. A wonderful to see show and a lovely to visit castle were written about by Robert.
12. An irritating to keep cat and a tough to clean stain were making Henry complain.
13. A delicious to eat cake and a pleasant to take trip were on Frank's mind.
14. A great to watch game and a good to report victory had delighted Lucy.
15. A difficult to read book and a risky to cross street were mentioned by John's friend.
16. A sour to taste fruit and a horrible to smell toilet had made Paul feel sick.
17. A shy to speak boy and a willing to help girl finished the work together.
18. An easy to book ticket and a reasonable to pay price had relieved Helen.
19. A popular to play game and an easy to fly kite were mentioned by Anna.
20. An eager to show off girl and a slow to respond gentleman met at a party.
21. An awkward to use glass and a gorgeous to drink wine were provided by Nancy.
22. A soft to touch blanket and a tasty to eat cookie were described by Kerry.
23. An impossible to accomplish assignment and a complicated to run program annoyed Kathy a lot.
24. A dangerous to climb rock and a nice to appreciate flower were shown in Harry's

album.
25. A dangerous to cross river and a steep to climb mountain were conquered by Tom.
26. A distinct to see mark and an annoying to do task had bothered Jenny.
27. A scary to hear noise and an exciting to watch film were experienced by Jack.
28. A tiresome to endure play and a tricky to learn poem were boring Brian.
29. An expensive to hire suit and a harsh to follow meeting were criticized by Wendy.
30. A comfortable to ride bicycle and a light to carry laptop were bought by Geoffrey.
31. A horrible to recall accident and an awful to witness situation impressed Lucy deeply.
32. A ready to battle knight and an eager to assist princess returned to the palace safely.
33. An inspiring to read article and an impressive to observe painting were recommended by the professor.
34. An unsuitable to make remark and a quick to spread rumor got Rebecca into trouble.
35. A heavy to lift bag and a hard to remember song were annoying Gerald.
36. A hard to tame horse and an urgent to deliver message worried the cowboy.

Experiment 2

The stimuli for Experiment 2 are provided below in the condition NP1 = AdjP, NP2 = AdjP. The other conditions can be constructed by re-organizing the syntactic structure of the relevant noun phrases.

1. A brave knight and a young princess returned to the palace safely.
2. An exciting project and a decisive victory had delighted Lucy.
3. A fresh salad and a fine wine were prepared by Nancy.
4. A depressing story and a tragic event were narrated by Maria.
5. A difficult book and a risky street were mentioned by John's friend.
6. A fascinating speech and an interesting magazine were praised by Georgia.
7. A charming girl and a modest gentleman met at a party.
8. A demanding boss and a lazy employee had a quarrel.
9. A naughty boy and a cute puppy were playing on the floor.
10. A pretty zookeeper and a lively monkey attracted a lot of visitors.
11. A cheap ticket and a reasonable price had relieved Helen.
12. A cruel fact and a painful sin had been troubling Jill.
13. An irritating cat and a noisy neighbor were making Henry complain.
14. A wonderful show and a lovely castle were written about by Rachel.
15. A comfortable bicycle and a light laptop were bought by Geoffrey.
16. A delicious cake and a pleasant trip were on Frank's mind.
17. A challenging quiz and a complex problem were solved by Bill.
18. A clever lawyer and a greedy businessman made a deal.
19. A timid boy and an active girl finished the work together.
20. A rare disease and a weak policy caused big trouble for that country.
21. A strict father and a clever daughter took part in the activity.

22. A humorous director and a talented actor put on a superb show.
23. A dedicated doctor and a considerate nurse stayed with the patient all night.
24. A heavy bag and a tiring journey were bothering Gerald.
25. A sour fruit and a horrible toilet had made Paul feel sick.
26. An expensive suit and a boring meeting were criticized by Wendy.
27. A new car and a large house were sold by Hubert.
28. An old computer and a complicated program annoyed Kathy a lot.
29. A popular game and a lovely kite were mentioned by Anna.
30. A big tree and a nice flower were shown in Harry's album.
31. An offensive remark and a widespread rumor got Rebecca into trouble.
32. An inaccurate map and an unknown village had confused Connie totally.
33. A serious mistake and a bitter lesson drove William crazy.
34. An innocent girl and a kind policeman had a long conversation.
35. A severe illness and a heavy rain ruined her day.
36. A useful language and a helpful book were recommended by Larry.
37. A rich owner and a large dog were walking on the street.
38. A funny joke and a pretty song were recalled by Thomas.
39. A soft blanket and a tasty cookie were described by Kerry.
40. A dusty room and a faint light upset Tim deeply.
41. An inspiring article and an original painting were recommended by the professor.
42. A famous scientist and an enthusiastic journalist had a face-to-face interview.
43. A sad story and an unforgettable experience inspired Emily to write the novel.
44. A distinct stain and an annoying assignment had bothered Jenny.
45. A cozy bedroom and a wide balcony pleased the guests.
46. A picky professor and an excellent student had a heated debate.
47. An old photo and a broken toy reminded Jill of his childhood.
48. A scary noise and a horrible accident were noticed by Jack.

Appendix S2: Acceptability Judgment Test

Experiment 1: multiword AdjPs and RCs

To examine whether multi-word AdjPs (e.g., *an easy to grasp problem*) are perceived as less acceptable compared with RCs (e.g., *a problem that is easy to grasp*), we conducted an acceptability judgement test prior to the main experiment. The 144 items (36 items in each of the four conditions) used in Experiment 1 were assigned to four lists using Latin square design, with each list containing one condition of each item, and each condition occurred the same number of times across lists. Each list also contained 36 fillers of unrelated structures. To make the acceptability test sensible, half of the fillers contained various grammatical errors (such as errors in tense, number-agreement, misuse of articles and prepositions, etc.). No two experimental items appeared adjacent to each other.

Twenty participants from the same population as the main experiments took part in the test (They did not participate in the main experiments). They were required to rate the acceptability of each sentence on a 5-point scale (1 = totally unacceptable; 5 = totally acceptable). The ratings for the four types of sentences were as follows: A (NP1=AdjP; NP2=AdjP): mean = 2.12, *SD* = 0.96; B (NP1=RC; NP2=AdjP): mean = 2.33, *SD* = 1.08; C (NP1=RC; NP2=RC): mean = 3.80, *SD* = 0.67; D (NP1=AdjP; NP2=RC): mean = 2.26 *SD* = 0.98. Obviously, type C (i.e., when both NP1 and NP2 were modified by RCs) was rated as more acceptable than the other three types. This was confirmed by repeated measures ANOVAs, which showed significant differences between the four types of sentences, F (3, 57) = 37.012, p = .000. Planned pairwise

comparisons showed reliable differences between condition C and conditions A (t = 7.117, p = .000), B (t = 6.338, p = .000), and D (t = 7.293, p = .000), with no difference between the other three conditions (all ps >.081). Hence, multi-word AdjPs are perceived as disfavored for Chinese EFL learners, just as they are for English L1 speakers (Sturt et al., 2010).

Experiment 2: simple AdjPs and RCs

As in Experiment 1, we conducted an acceptability judgment test on the simple AdjPs (e.g., *an easy problem*) and RCs (e.g., *a problem that is easy*) used in Experiment 2. The 192 items (48 items in each of the four conditions) used in Experiment 2 were assigned to four lists, with each list containing one condition of each item and each condition occurring the same number of times across lists. Each list also contained 48 fillers of unrelated structures. Half of the fillers contained various grammatical errors.

Twenty further participants from the same population as the main experiments took part in the test (They did not participate in the main experiments or the acceptability test of Experiment 1). They were required to rate the acceptability of each sentence on a 5-point scale as in Experiment 1. The ratings for the four types of sentences were as follows: A (NP1=AdjP; NP2=AdjP): mean = 4.07, *SD* = 0.57; B (NP1=RC; NP2=AdjP): mean = 3.47, *SD* = 0.72; C (NP1=RC; NP2=RC): mean = 3.60, *SD* = 0.75; D (NP1=AdjP; NP2=RC): mean = 3.41 *SD* = 0.80. Obviously, all types of sentences were perceived as highly acceptable, with both NP1 and NP2

modified by simple AdjPs being ranked more highly than the other three types. This confirmed that simple AdjPs were common, unmarked constructions for L2 speakers, which stands in contrast to multi-word AdjPs used in Experiment 1. Repeated measures ANOVAs showed significant differences between the four types of sentences, F (3, 57) = 9.047, p = .000. Planned pairwise comparisons showed reliable differences between condition A and conditions B (t = 4.257, p = .000), C (t = 3.850, p = .001), and D (t = 3.570, p = .002), with no difference between the other three conditions (all ps >.211).

Appendix S3: Model Comparison Results

Table S3.1 Fixed Effects for the Final Region, Experiment 1

	b	95% CI	*SE*	*df*	*t*	*p*
(Intercept)	7.131	[7.027, 7.236]	0.053	54.410	133.525	< .001
NP1	-0.028	[-0.071, 0.015]	0.022	1015.000	-1.258	.209
NP2	0.055	[-0.006, 0.115]	0.031	35.710	1.774	.085
cLength	0.031	[0.016, 0.046]	0.008	35.810	4.058	< .001
NP1× NP2	-0.089	[-0.191, 0.013]	0.052	34.930	-1.712	.096

The formula of the final model for the final region, with centralized region length as a fixed factor.
log(RT) ~ NP1×NP2 + cLength + (1|Subject) + (1 + NP2 + NP1×NP2 ||Item)

Table S3.2 Model Comparison Results with Item Order as a Continuous Covariate, Experiment 1

	χ^2	*df*	*p*
Item	6.808	1	.009
Item×NP2	2.247	1	.134
Item×NP1	0.252	1	.616
Item×NP1 ×NP2	0.156	1	.693

Table S3.3 Fixed Effects for the Final Region, Experiment 2

	b	95% CI	*SE*	*df*	*t*	*p*
(Intercept)	7.318	[7.242, 7.395]	0.039	59.912	187.514	< .001
NP1	-0.016	[-0.055, 0.024]	0.020	46.514	-0.785	.436
NP2	0.045	[0.003, 0.087]	0.021	28.280	2.099	.045
cLength	0.027	[0.016, 0.037]	0.005	50.798	5.026	< .001
NP1×NP2	-0.118	[-0.195, -0.041]	0.039	47.146	-3.009	.004

The formula of the final model for the final region, with centralized region length as a fixed factor.
log(RT) ~ NP1×NP2 + cLength + (1+NP2 ||Subject) + (1+ NP1 + NP2 + NP1×NP2 ||Item)

Table S3.4 Model Comparison Results with Item Order as a Continuous Covariate, Experiment 2

	χ^2	*df*	*p*
Item	10.004	1	.002
Item×NP2	0.969	1	.325
Item×NP1	0.141	1	.708
Item×NP1×NP2	0.141	1	.708

Table S3.5 Fixed Effects for Cross-Experiment Analysis of the AdjP-AdjP conditions using log-transformed RTs

	b	95% CI	*SE*	*df*	*t*	*p*
(Intercept)	7.519	[7.423, 7.616]	0.049	103.033	152.704	< .001
NP1	-0.096	[-0.14, -0.052]	0.022	40.978	-4.277	< .001
Experiment	0.324	[0.13, 0.517]	0.099	105.673	3.284	.001
cLength	0.032	[0.021, 0.042]	0.006	81.058	5.646	< .001
NP1× Experiment	-0.039	[-0.127, 0.049]	0.045	42.453	-0.868	.390

The formula of the final model for comparing the two AdjP conditions (multi-word AdjP vs. simple AdjP) across Experiments 1 and 2, with centralized region length as a fixed factor. log(RT) ~ NP1×Experiment + cLength + (1+NP1 ||Subject) + (1+ NP1 ||Item)

Table S3.6 Fixed Effects for Cross-Experiment Analysis of the AdjP-AdjP conditions using normalized RTs

	b	95% CI	*SE*	*df*	*t*	*p*
(Intercept)	0.167	[0.009, 0.326]	0.081	104.766	2.066	.041
NP1	-0.175	[-0.254, -0.097]	0.040	35.688	-4.372	.000
Experiment	0.576	[0.258, 0.894]	0.162	107.463	3.550	.001
cLength	0.050	[0.031, 0.069]	0.010	79.823	5.175	.000
NP1× Experiment	-0.192	[-0.35, -0.034]	0.081	37.151	-2.381	.022

The formula of the final model for comparing the two AdjP conditions (multi-word AdjP vs. simple AdjP) across Experiments 1 and 2, with centralized region length as a fixed factor. scale(RT) ~ NP1×Experiment + cLength + (1+NP1 ||Subject) + (1+ NP1 ||Item)