# Conceptualizing Constructions of Space Particle *Xià* in Mandarin Chinese: A Corpus Based Study

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# *Xià* in Mandarin

*zài*

within a range and/or at a place or position

*zhī*

of; identical to *de* in Chinese

- 'under, at lower place or bottom' (Wang, 2000; MOE Dict., 2022)
- collocates with *zhī* to form postpositions, e.g. [...*zhīxià*]
- collocates with prepositions like *zài* to form circumpositions, e.g., [*zài...xià*]

## Key points from Literature

- Zhang (2000) : all the prepositions that come before the locative prepositional phrases are omittable
- Cai (2013) : the preposition *zài* functions merely as a location marker while the postposition itself sufficiently takes over the spatial meaning

# *Xià* in Mandarin

## XIÀ

- **[...*xià*]** 下
- **[ ...*zhīxià* ]** 之下
- **[ *zài...xià* ]** 在…下
- **[*zài...zhīxià*]** 在…之下

# Research Purpose

**Motivation**

- true synonyms are rare (Saeed, 2011)
- most studies in Mandarin about vertical space particle focused on acquisition e.g., Wang (2000) and/or discussing single dimension like trajectory or space cognition
- 'a word may occur in a construction if it is semantically compatible with the meaning of the construction' (Stefanowitsch & Gries, 2003: 213)

**Research Question**

- Do the four different constructions demonstrate different meaning?
- Do *zhī* and/or *zài* play any role in the meaning?

# Previous Studies on Vertical Space Particles

- Jingfei (2019)

  dynamicity of Chinese shang/xia & English up/down

- Liao & Liang (2018), Cook & Stevenson (2006)

  dynamicity of Trajectory

- Kemmerer (2006: 1609)

  'the spatial concepts found in English prepositions are extremely coarse — in other words, very abstract, schematic, and categorical'

## Near-synonym analysis – semantic prosody

- Wu (2019)

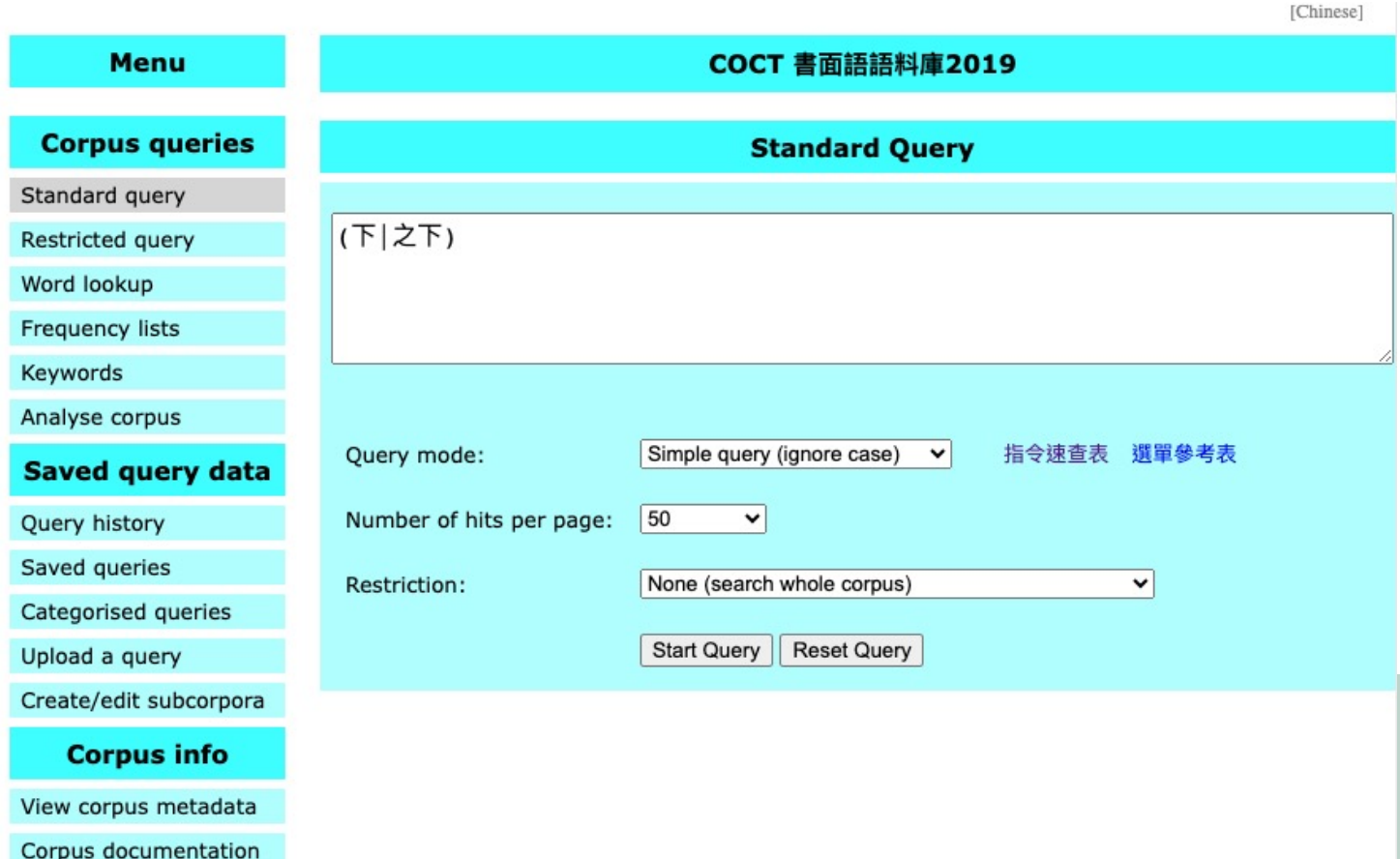
  near-synonyms of *cause* in Mandarin Chinese under different topics

# Methodology

**Procedure**

data collection

- COCT 2019 Written
- keywords: […*xià*] 下 , [ …*zhīxià* ] 之下



# Methodology

## Procedure

**data collection**
- COCT 2019 Written
- keywords: […*xià*] 下 , [ …*zhīxià* ] 之下

**data preprocessing**
- the R language
- recategorizing the collected data

**constructions extraction**
- […*xià*], […*zhīxià*], [*zài…xià*]在…下 , [*zài…zhīxià*]在…之下
- Nc (locatives), Ncd (positional markers), Ng (postpositions)

**collostructional analysis**
- Gries & Stefanowitsch (2004a)
- Multiple Distinctive Collexeme Analysis

**post-hoc analysis**
- concreteness, dynamicity, and semantic prosody

**Chi-square test**
- distinctiveness > 3.841 (Scott and Tribble, 2006: 77)
- *pbin* > 0 (attraction)

# Methodology

## Multiple Distinctive Collexeme Analysis

- a statistical analysis
- a method used to investigate near-synonymous constructions
- comparing the words in specific slot of constructions

## Post-hoc Analysis

**Dynamicity**

A dichotomic scale. A dynamic event refers to an activity or an action with a time course. (Su & Chen, 2018)

**Concreteness**

physical object (Collins Online Dictionary, 2022) or constituting actual things (DICTIONARY.COM)

**Semantic Prosody**

an impression of an attitudinal or pragmatic meaning of a lexical item (Sinclair, 1999; Cheng, 2013; Huston & Francis, 2000; Sutbbs, 1995)

# Result

**Data**

data collection

data preprocessing

constructions extraction

collostructional analysis

post-hoc analysis

Chi-square test

| | head N. count | head N. type |
|---|---|---|
| […*xià*] | 329,223 | 21,744 |
| […*zhīxià*] | 34,769 | 7,943 |
| **Total** | **363,992** | **29,687** |

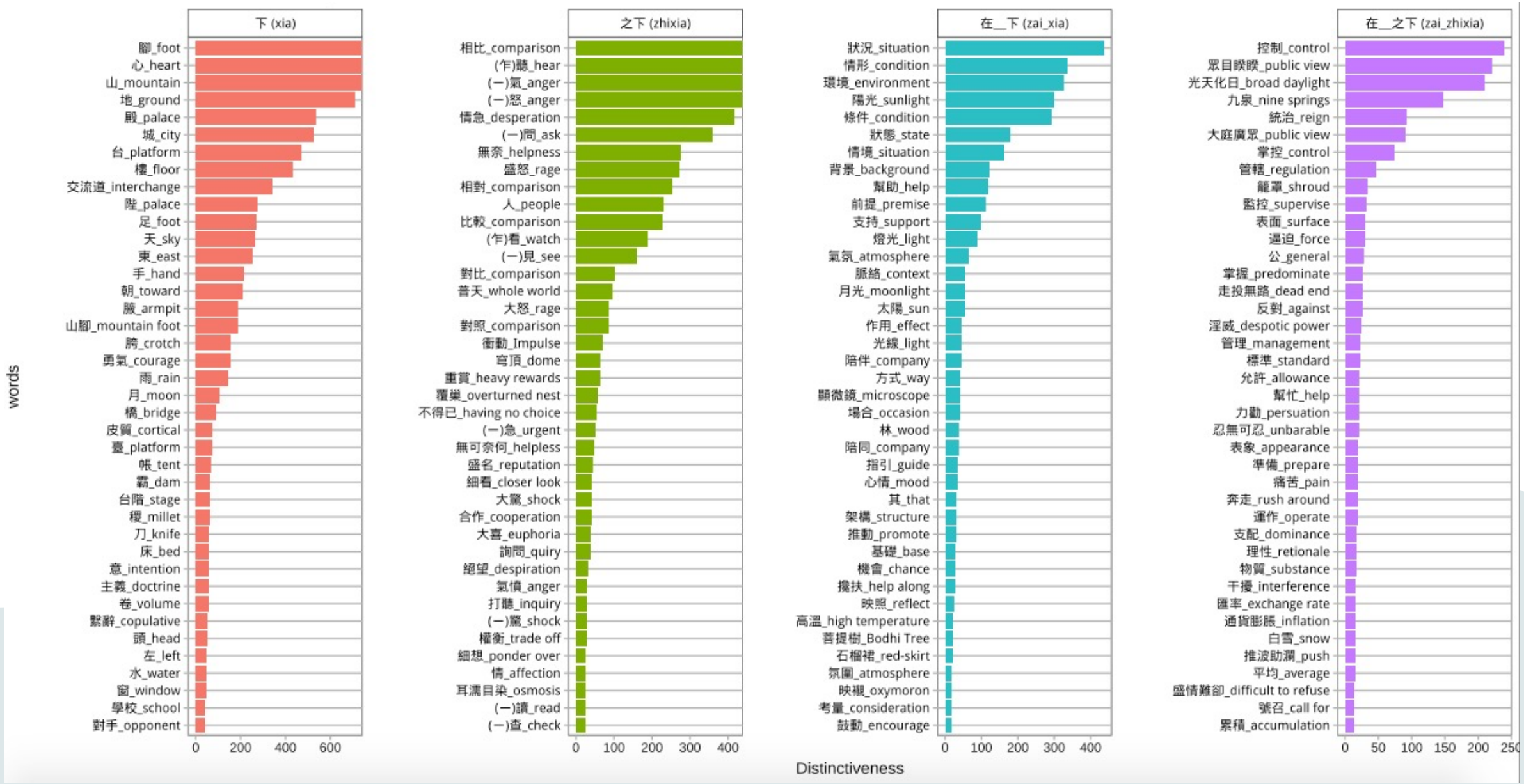
| | head N. count | head N. type |
|---|---|---|
| […*xià*] | 74,633 | 9970 |
| […*zhīxià*] | 15,660 | 3333 |
| [*zài*…*xià*] | 89,526 | 6695 |
| [*zài*…*zhīxià*] | 17,152 | 4197 |
| **Total** | **195,046** | **24,195** |

| | head N. count | head N. type |
|---|---|---|
| […*xià*] | 21,649 | 40 |
| […*zhīxià*] | 4,366 | 40 |
| [*zài*…*xià*] | 21,023 | 40 |
| [*zài*…*zhīxià*] | 1,910 | 40 |
| **Total** | **48,948** | **160** |

| | head N. count | head N. type |
|---|---|---|
| […*xià*] | 30,796 | 572 |
| […*zhīxià*] | 5,764 | 311 |
| [*zài*…*xià*] | 25,464 | 190 |
| [*zài*…*zhīxià*] | 4,241 | 414 |
| **Total** | **66,265** | **1,487** |

# Results

**Multiple Distinctive Collexeme Analysis – collostructional analysis**



# Results

## Multiple Distinctive Collexeme Analysis – post-hoc analysis

| LM | Gloss | pbin_xia | Distinctiveness | N | dynamicity | concreteness | semantic prosody | other features |
|---|---|---|---|---|---|---|---|---|
| 山 | mountain | Inf | Inf | 2105 | stative | concrete | neutral | nature |
| 心 | heart | Inf | Inf | 846 | stative | concrete | neutral | nature |
| 腳 | | | | | | | | |
| 地 | | | | | | | | |
| 殿 | | | | | | | | |
| 城 | | | | | | | | |
| 台 | | | | | | | | |
| 樓 | | | | | | | | |
| 交流道 | | | | | | | | |
| 陛 | | | | | | | | |
| 足 | | | | | | | | |
| 天 | | | | | | | | |
| 東 | | | | | | | | |
| 手 | | | | | | | | |
| 朝 | | | | | | | | |
| 腋 | | | | | | | | |
| 山腳 | | | | | | | | |
| 胯 | | | | | | | | |
| 勇氣 | | | | | | | | |
| 雨 | | | | | | | | |
| 月 | | | | | | | | |
| 橋 | | | | | | | | |
| 皮質 | | | | | | | | |
| 臺 | | | | | | | | |
| 帳 | | | | | | | | |
| 霸 | | | | | | | | |
| 台階 | | | | | | | | |
| 稷 | | | | | | | | |

| LM | Gloss | pbin_zhixia | Distinctiveness | N | dynamicity | concreteness | semantic prosody | other features |
|---|---|---|---|---|---|---|---|---|
| (一)怒 | anger | Inf | Inf | 426 | dynamic | abstract | negative | emotions & feelings |
| (一)氣 | anger | Inf | Inf | 471 | dynamic | abstract | negative | emotions & feelings |
| 相比 | comparison | | | | | | | |
| (乍)聽 | hear | | | | | | | |
| 情急 | desperation | | | | | | | |
| (一)問 | ask | | | | | | | |
| 無奈 | helpness | | | | | | | |
| 盛怒 | rage | | | | | | | |
| 相對 | comparison | | | | | | | |
| 人 | people | | | | | | | |
| 比較 | comparison | | | | | | | |
| (乍)看 | watch | | | | | | | |
| (一)見 | see | | | | | | | |
| 對比 | comparison | | | | | | | |
| 普天 | whole world | | | | | | | |
| 大怒 | rage | | | | | | | |
| 對照 | comparison | | | | | | | |
| 衝動 | Impulse | | | | | | | |
| 穹頂 | dome | | | | | | | |
| 重賞 | heavy rewards | | | | | | | |
| 覆巢 | overturned nest | | | | | | | |
| 不得已 | have no choice | | | | | | | |

| LM | Gloss | pbin_zai_xia | Distinctiveness | N | dynamicity | concreteness | semantic prosody | other features |
|---|---|---|---|---|---|---|---|---|
| 狀況 | situation | 242.73 | 436.64 | 2393 | stative | abstract | neutral | |
| 情形 | condition | 182.55 | 336.02 | 2365 | stative | abstract | neutral | |
| 環境 | environment | | | | | | | |
| 陽光 | sunlight | | | | | | | |
| 條件 | condition | | | | | | | |
| 狀態 | state | | | | | | | |
| 情境 | situation | | | | | | | |
| 背景 | background | | | | | | | |
| 幫助 | help | | | | | | | |
| 前提 | premise | | | | | | | |
| 支持 | support | | | | | | | |
| 燈光 | light | | | | | | | |
| 氣氛 | atmosphere | | | | | | | |
| 脈絡 | context | | | | | | | |
| 月光 | moonlight | | | | | | | |
| 太陽 | sun | | | | | | | |
| 作用 | effect | | | | | | | |
| 光線 | light | | | | | | | |
| 陪伴 | company | | | | | | | |
| 方式 | way | | | | | | | |

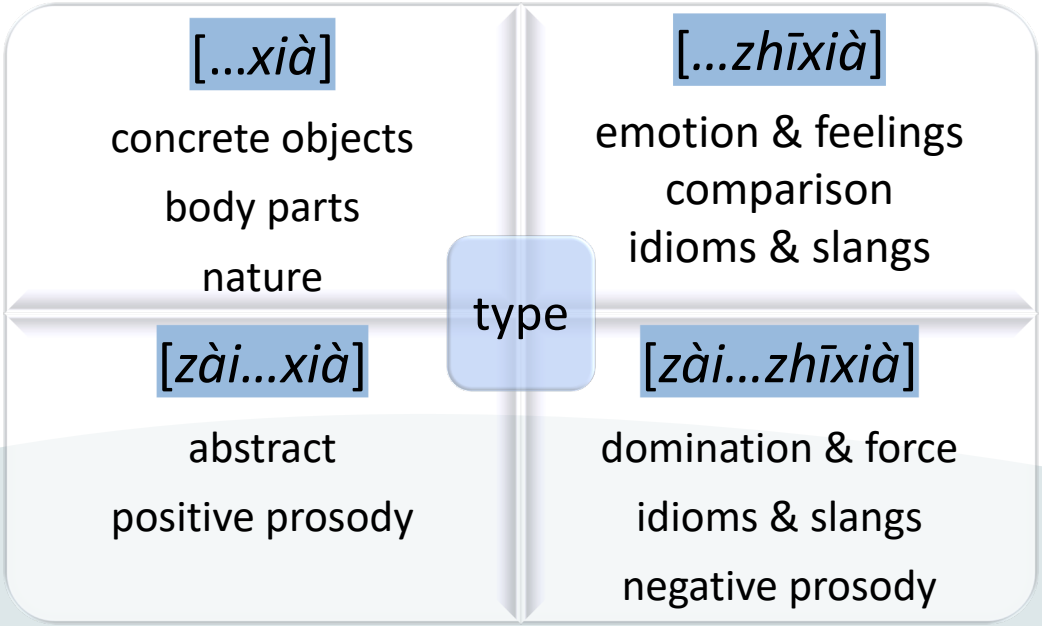
| LM | Gloss | pbin_zai_zhixia | Distinctiveness | N | dynamicity | concreteness | semantic prosody | other features |
|---|---|---|---|---|---|---|---|---|
| 控制 | control | 122.26 | 238.91 | 253 | stative | abstract | negative | dominance & force |
| 眾目睽睽 | public view | 135.11 | 221.1 | 229 | stative | abstract | negative | dominance & force |
| 光天化日 | broad daylight | 90.16 | 209.47 | 182 | stative | abstract | neutral | |
| 九泉 | nine springs | 49.92 | 147.24 | 92 | stative | concrete | negative | |
| 統治 | reign | 44.5 | 92.49 | 156 | dynamic | abstract | neutral | dominance & force |
| 大庭廣眾 | public view | 59.23 | 90.45 | 112 | stative | abstract | neutral | |
| 掌控 | control | 49.97 | 74.13 | 80 | stative | abstract | neutral | dominance & force |
| 管轄 | regulation | 16.52 | 46.14 | 31 | dynamic | abstract | neutral | dominance & force |
| 籠罩 | shroud | 24.25 | 34.01 | 47 | dynamic | abstract | negative | dominance & force |
| 監控 | supervise | 13.27 | 32.13 | 30 | dynamic | abstract | negative | dominance & force |
| 表面 | surface | 13.83 | 30.81 | 61 | stative | abstract | neutral | |
| 逼迫 | force | 19.56 | 29.61 | 25 | dynamic | abstract | negative | dominance & force |
| 公 | general | 18.8 | 27.81 | 19 | stative | concrete | neutral | dominance & force |
| 掌握 | predominate | 16.96 | 26.93 | 27 | dynamic | abstract | neutral | emotions & feelings |
| 走投無路 | dead end | 7.7 | 26.77 | 14 | stative | abstract | negative | |
| 反對 | against | 13.89 | 25.73 | 30 | stative | abstract | negative | dominance & force |

# Results

**Multiple Distinctive Collexeme Analysis – collostructional analysis**

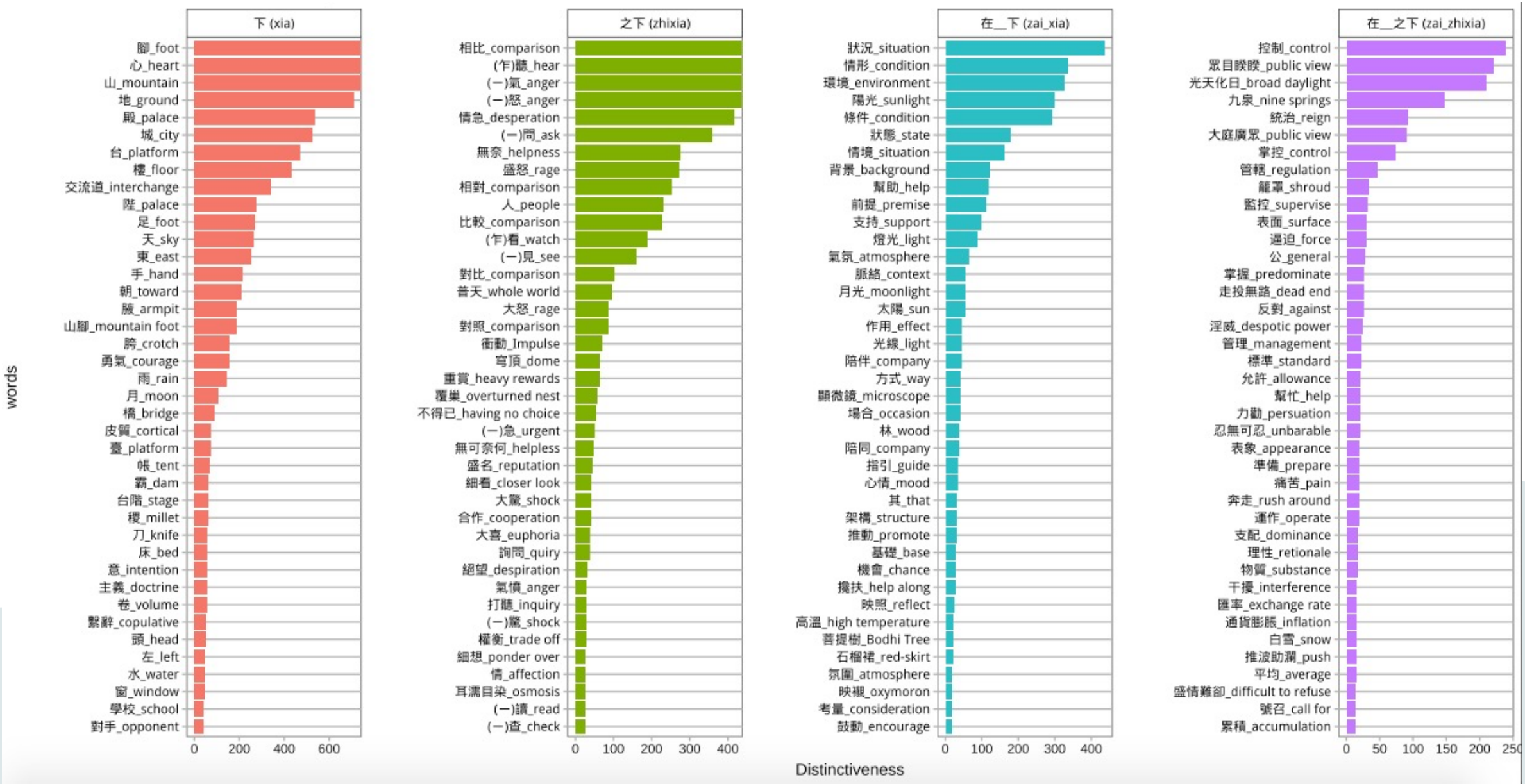
## Overview

- shorter collexemes with shorter constructions, and vise versa
- idioms tend to go with “之” (*zhī*)
- “在” (*zài*) elicits semantic prosody



# Results

**Multiple Distinctive Collexeme Analysis – collostructional analysis**

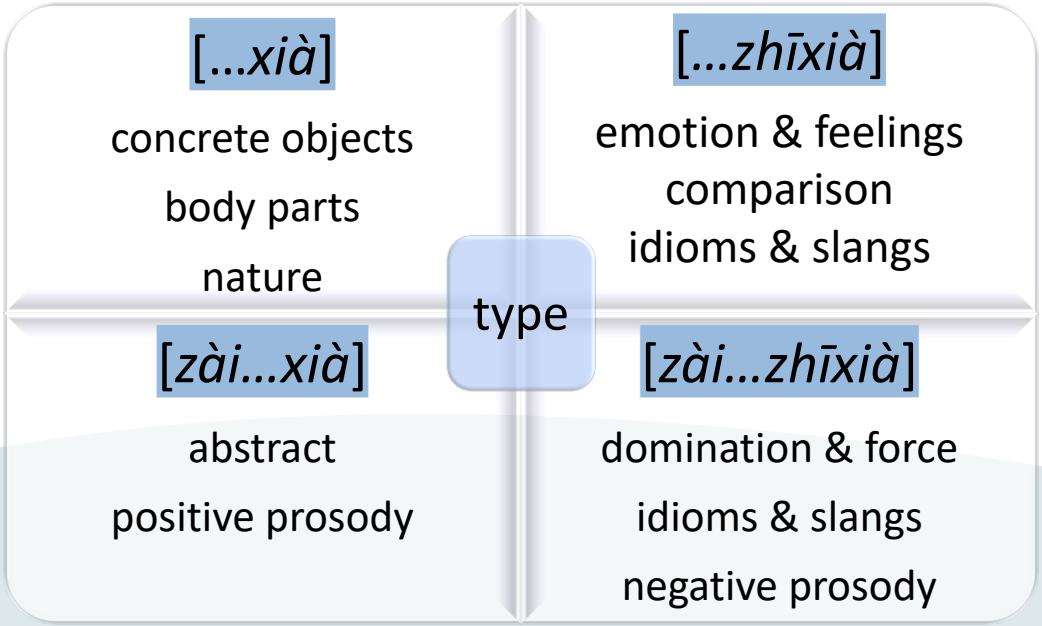


# Results

**Multiple Distinctive Collexeme Analysis – collostructional analysis**

## Overview

- shorter collexemes with shorter constructions, and vise versa
- idioms tend to go with “之” (*zhī*)
- “在” (*zài*) and “之” (*zhī*) elicit semantic prosody

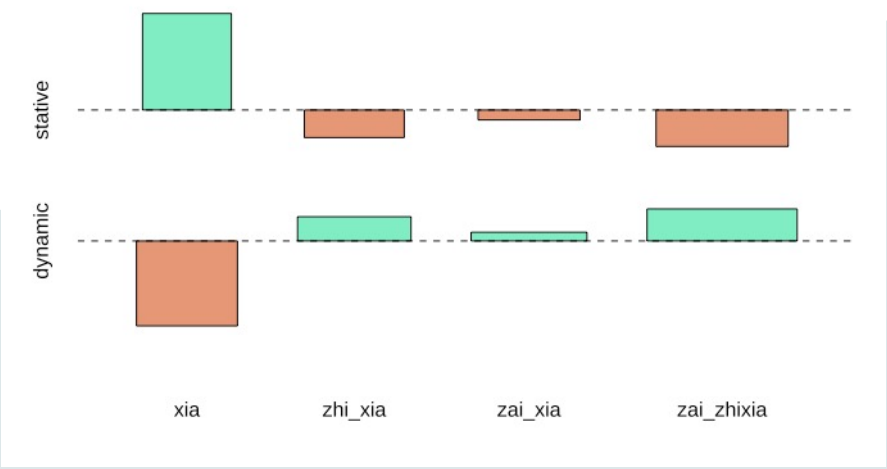


# Results

## Chi-square test - Dynamicity

$\chi^2$= 241.237, *df* = 3, Cramer's *V* = 0.403, *p* = .000

| | | Dynamicity | | Total | *zhī* | *zài* |
|---|---|---|---|---|---|---|
| | | stative | dynamic | | | |
| […*xià*] | Observed Count | 560 | 12 | 572 | | |
| | Standardized Residual | 5.7 | -10.4 | | | |
| […*zhīxià*] | Observed Count | 188 | 123 | 311 | ✓ | |
| | Standardized Residual | -3.3 | 6.1 | | | |
| [*zài*…*xià*] | Observed Count | 138 | 50 | 188 | | ✓ |
| | Standardized Residual | -.6 | 1.0 | | | |
| [*zài*…*zhīxià*] | Observed Count | 258 | 156 | 414 | ✓ | ✓ |
| | Standardized Residual | -3.4 | 6.2 | | | |
| **Total** | **Count** | **1,144** | **341** | **1485** | | |

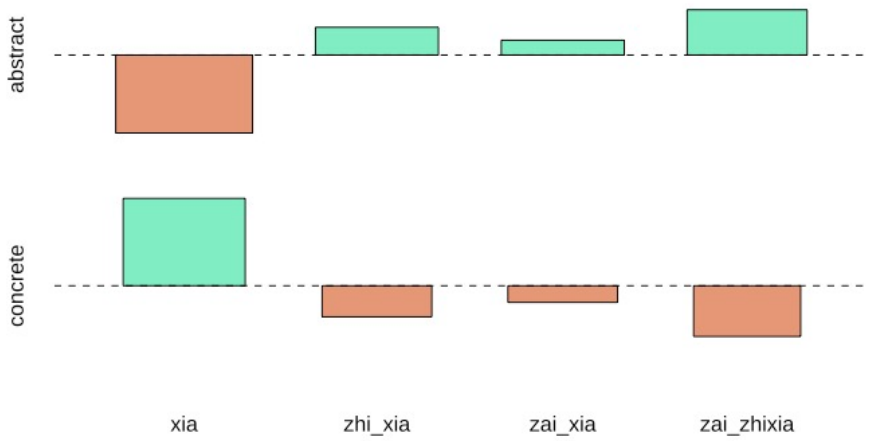



- ✓ *zhī* constructions are attracted to dynamic collexemes
- ✓ […*xià*] is more stative

# Results

## Chi-square test - Concreteness

| $\chi^2$= 511.386, *df* = 3, Cramer's *V* = 0.587, *p* = .000 | | Concrete | | Total | *zhī* | *zài* |
|---|---|---|---|---|---|---|
| | | abstract | concrete | | | |
| […*xià*] | Observed Count | 172 | 400 | 572 | | |
| | Standardized Residual | -10.4 | 14.2 | | | |
| […*zhīxià*] | Observed Count | 268 | 43 | 311 | ✓ | |
| | Standardized Residual | 4.6 | -6.3 | | | |
| [*zài*…*xià*] | Observed Count | 152 | 36 | 188 | | ✓ |
| | Standardized Residual | 2.7 | -3.6 | | | |
| [*zài*…*zhīxià*] | Observed Count | 376 | 38 | 414 | ✓ | ✓ |
| | Standardized Residual | 6.5 | -8.8 | | | |
| **Total** | **Count** | **968** | **517** | **1485** | | |

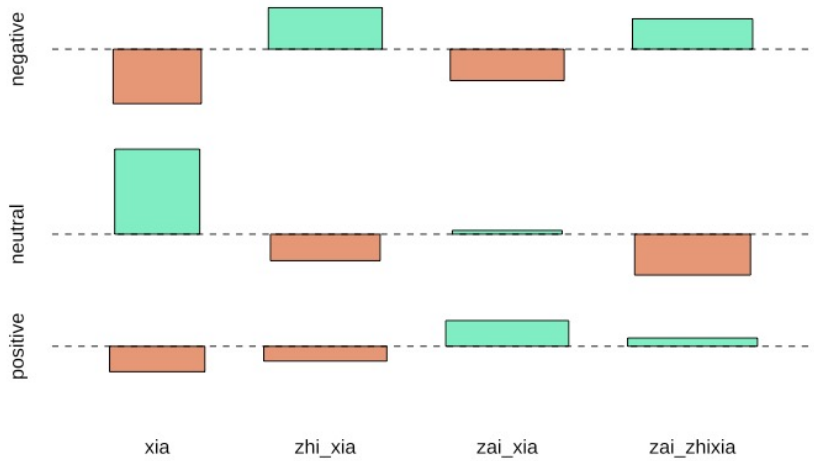



- ✓ constructions with *zhī* and *zài* repel concreteness
- ✓ […*xià*] strongly attract concreteness

# Results

## Chi-square test - Semantic Prosody

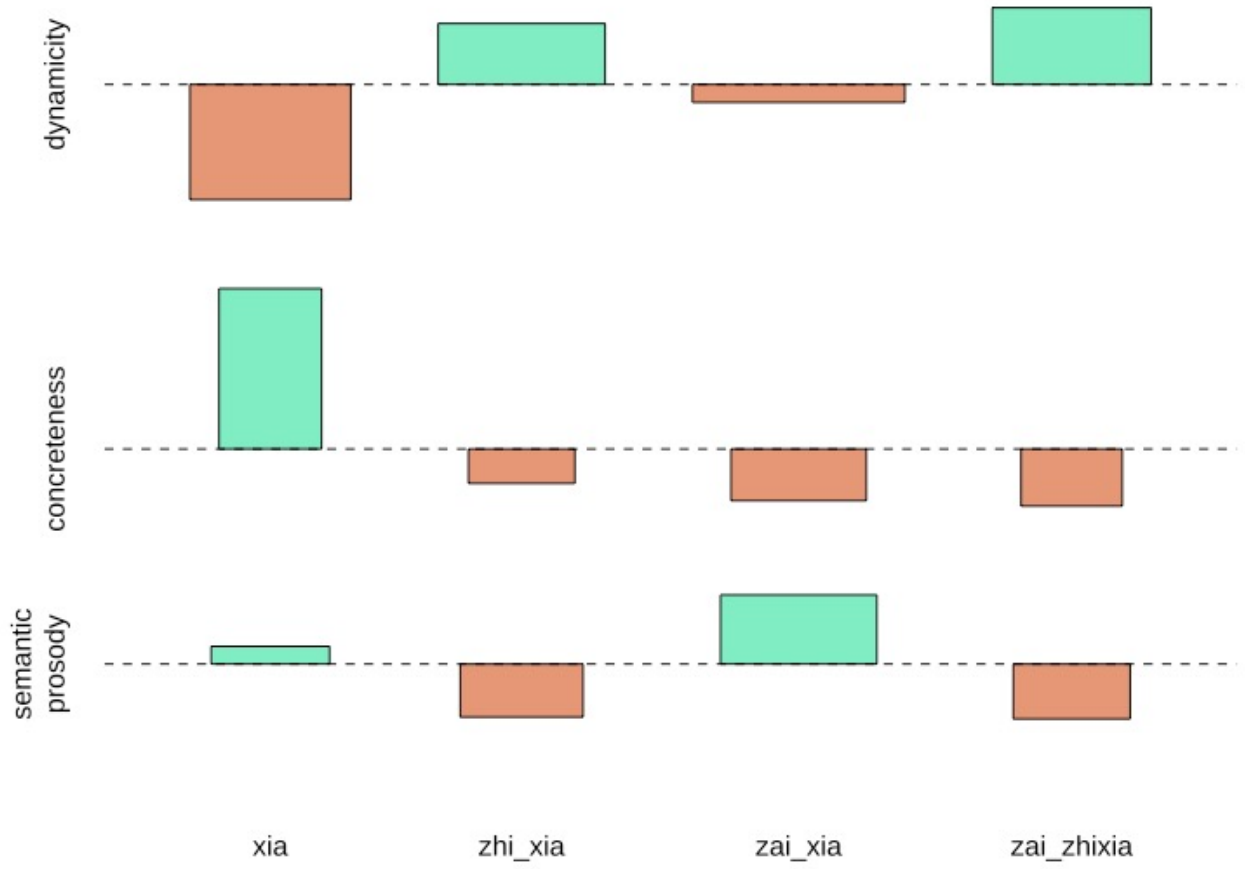
| $\chi^2$= 291.354, *df* = 6, Cramer's *V* = 0.443, *p* = .000 | | Semantic Prosody | | | Total | *zhī* | *zài* |
|---|---|---|---|---|---|---|---|
| | | negative | neutral | positive | | | |
| […*xià*] | Observed Count | 14 | 540 | 18 | 572 | | |
| | Standardized Residual | -8.6 | 5.1 | -3.4 | | | |
| […*zhīxià*] | Observed Count | 102 | 196 | 13 | 311 | | |
| | Standardized Residual | 6.5 | -2.6 | -1.8 | | ✓ | |
| [*zài*…*xià*] | Observed Count | 7 | 148 | 33 | 188 | | |
| | Standardized Residual | -4.5 | .5 | 5.5 | | | ✓ |
| [*zài*…*zhīxià*] | Observed Count | 135 | 240 | 39 | 414 | | |
| | Standardized Residual | 7.4 | -4.1 | 1.9 | | ✓ | ✓ |
| **Total** | **Observed Count** | **258** | **1,124** | **103** | **1485** | | |




- ✓ […*xià*] attracts neutral collexemes
- ✓ *zhī* constructions attract negative collexemes, and repel neutral ones
- ✓ constructions with both *zhī* and *zài* elicit semantic prosody

# Conclusion

- different constructions involve different connotations




- attract
- repel

- […*xià*] and attracts concrete, static, and neutral LMs
- [*zài*…*xià*] also attract abstract and positive LMs
- both *zhī* and *zài* constructions elicit semantic prosody and abstraction
- *zhī* is more consistent

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# THANK YOU

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