

# Mandarin demonstratives as strong definites: An experimental investigation

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# Introduction

- Major challenges for theories of definiteness:
  - how languages encode definiteness differently (Schwarz 2009; Arkoh & Matthewson 2013; Jenks 2018, i.a.),
  - the role of context in determining the choice of the different forms (e.g. Ahn 2019, 2023; Dayal & Jiang 2022; Bremmers *et al.* 2022; Simpson & Wu 2022; Hinterwimmer & Patil 2022; Saha *et al.* 2023, cf. Heim 1991)

# Introduction

- Two main approaches to definiteness:
  - ① **uniqueness** (Frege 1892; Russell 1905; Strawson 1950): Uniqueness approaches build on the insight that definite descriptions refer to entities that are *unique relative to some domain*.
  - ② **familiarity/anaphoricity** (Heim 1982; Roberts 2003): Definite descriptions pick out referents that are **familiar** to the discourse participants, where familiarity is often understood as being **anaphoric** to a preceding linguistic expression.

## Schwarz 2009, 2013

- Proposes a dichotomy between these two notions
- Manifested as two forms of definite articles in German (and many other Germanic dialects, e.g., Fering (Ebert 1971), Mönchen-Gladbach (Hartmann 1982), Bavarian (Scheutz 1988, Schwager 2007), Cologne (Himmelmann 1997), Rhineland (Heinrichs 1954, Hartmann 1967)).

- (1) Der Empfang wurde **vom** / **#von dem** Bürgermeister eröffnet.  
the reception was by.the<sub>weak</sub> / by the<sub>strong</sub> mayor opened  
'The reception was opened by the mayor.' (Schwarz 2009: 40)
- (2) Hans hat einen Schriftsteller und einen Politiker interviewt. Er hat  
Hans had a writer and a politician interviewed he has  
**# vom** / **von dem** Politiker keine interessanten Antworten  
from.the<sub>weak</sub> / from the<sub>strong</sub> politician no interesting answers  
bekommen.  
gotten  
'Hans interviewed a writer and a politician. He didn't get any interesting answers from the politician.'

## Other languages

This line of research has been pursued in a wide range of languages, including some where bare nouns are claimed to be unique definites, contrasting with another form as anaphoric definites.

- E.g., Akan (Arkoh & Matthewson 2013), Bangla (Biswas 2014), and Mandarin (Jenks 2018)

Yet these accounts have been challenged for each language:

- E.g., Akan (Bombi 2018, Owusu 2022), Bangla (Simpson & Biswas 2016), and Mandarin (Dayal & Jiang 2022, Bremmers et al 2022, Simpson & Wu 2022)

# This study

- Specifically focuses on Mandarin
- Experimentally evaluates differing claims in the literature about Mandarin (definite) bare nouns and **demonstratives** in anaphoric contexts.
- Concludes that what have typically been called demonstratives pattern with anaphoric definites, connecting to observations about language change

# Roadmap

- 1 Definites & Demonstratives in Mandarin
- 2 Crosslinguistic experiments
- 3 The Mandarin experiment
- 4 Analysis
- 5 Conclusion

## Definites & Demonstratives in Mandarin

## Jenks (2018) (building on Schwarz 2009, 2013)

- Mandarin distinguishes uniqueness-based, i.e., *weak* (Frege 1892, Russell 1905), and anaphoric, i.e., *strong* (Heim 1982, Roberts 2003) definites.
- Bare nouns are used in *uniqueness* contexts and **demonstratives** in *anaphoric* contexts (3a).

(3) Jiaoshi li zuo zhe yi ge nansheng yi ge nusheng.  
classroom inside sit PROG one CL boy one CL girl  
'There is a boy and a girl sitting in the classroom.'

- a. Wu zuotian yudao {#Ø/na ge} nansheng.  
I yesterday meet Ø that CL boy  
'I met the boy yesterday.'

## Jenks (2018) (building on Schwarz 2009, 2013)

- The weak and strong definite are identical in their assertive content (unlike Schwarz 2009), with the strong definite having a stronger presupposition.

- (4) a. *weak definite*:  $\lambda s_r. \lambda P : \exists!x(P(x)(s_r)). \quad \iota[P(x)(s_r)]$  (Jenks 2018: 513)
- b. *strong definite*:  $\lambda s_r. \lambda P. \lambda Q : \exists!x(P(x)(s_r) \wedge Q(x)). \quad \iota[P(x)(s_r)]$

- The use of the weak definite (**bare nouns**) is blocked if the presupposition of the strong definite (**demonstratives**) is met (i.e., in anaphoric contexts). (Maximize Presupposition, Heim 1982)  
 ⇒ except for subject positions, where bare nouns are felicitous as anaphors since they are continuing topics, *not due to being strong definites*
- This is formalized as the principle *Index!*

(5) *Index!*

Represent and bind all possible indices.

(Jenks 2018: 524)

# Dayal & Jiang (2022)

- Mandarin **bare nouns** are felicitous in both uniqueness and anaphoric contexts regardless of syntactic position (3b), while **demonstratives** are standard demonstratives.
- In case of change/ expansion in situation from the context situation (3) (such as including a new participant (3a)), **demonstratives** are preferred, but otherwise, **bare nouns** are preferred (3b).

- (3) Jiaoshi li zuo zhe yi ge nansheng yi ge nūsheng.  
classroom inside sit PROG one CL boy one CL girl  
'There is a boy and a girl sitting in the classroom.' [Context Situation]
- a. Wu zuotian yudao {#Ø/**na ge**} **nansheng**.  
I yesterday meet Ø that CL boy  
'I met the boy yesterday.' [Different situation]
  - b. **Nūsheng** zuo zai **nansheng** pangbian.  
girl sit DUR boy side  
'The girl was sitting next to the boy.' [Same situation]

## Bremmers, Liu, van der Klis, & Le Bruyn (2022)

- Mandarin **demonstratives** are strong definites, but **bare nouns** are felicitous in both uniqueness and anaphoric context (checked only subject position for bare nouns).
- The anaphoric use of **bare nouns** requires the anaphoric link to be in the context situation (3b) [situation-level familiarity]; they are infelicitous if the second sentence introduces a different situation, via a temporal change from the context situation (3a) [text-level familiarity].

- (3) Jiaoshi li zuo zhe yi ge nansheng yi ge nǚsheng.  
classroom inside sit PROG one CL boy one CL girl  
'There is a boy and a girl sitting in the classroom.' [Context Situation]
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# Simpson & Wu (2022)

Both **demonstratives** and **bare nouns** are felicitous in anaphoric contexts.  
Acceptance rates are regulated by two factors:

- Discourse coherence:
  - **Bare nouns** are fully grammatical when *discourse coherence* between the context and the follow-up sentences is high, i.e., shared time, location, and speaker perspective.
  - **Demonstratives** are preferred in case of breaks in coherence and continuity, i.e., shifts in time, location, or perspective between two paired sentences
- Post-verbal object position:
  - This position is generally the locus of new information, and **bare nouns** tend to be indefinites in this position; thus less preferred as anaphoric definites.

## Crosslinguistic experiments

## Saha (2023) & Saha, Sağ, & Davidson (2023)

### Anaphoric demonstratives vs. anaphoric definites

- The acceptability of **anaphoric demonstratives** is sensitive to discourse contexts unlike **definites**, based on experimental data from three languages.
  - one with determiners: **English**
  - two determinerless languages encoding definiteness distinctly:  
**Turkish** via bare nouns, **Bangla** via noun-classifier construction
- In addition to the effects of situation as mentioned in the previous literature, we observe that the presence of another contrasting NP in the context sentence affects the acceptability of demonstratives:
  - (4)    a. A boy entered the classroom. **That** boy sat down in the front row.
  - b. A boy and a girl entered the classroom. ??**That** boy sat down in the front row.

# Saha (2023) & Saha, Sağ, & Davidson (2023)

Our study crossed:

- ① The presence or absence of a contrasting noun in the context sentence
  - ② A follow-up sentence anchored to either the same or a different situation from the context situation.
- (5) {[*OneNP* A boy]/[*TwoNP* A boy and a girl]} entered the classroom.
- a. **The/That** boy sat down in the front row. (Same Situation)
  - b. I had noticed **the/that** boy at a coffee shop yesterday. (New Situation)
- New situations introduced both a **new event participant** and a **temporal change**.

# Saha (2023) & Saha, Sağ, & Davidson (2023)

- We adopted a **dual presentation** design (following Marty *et al.* 2020).
- Direct comparisons between conditions on the same screen can draw out subtle contrasts between conditions more effectively.
- Highlights the aspect of the judgment which the experimenter intends the participant to focus on (not, for example, choices of nouns and verbs, overall likelihood of the scenario, etc.).

**A boy and a girl entered the classroom.**

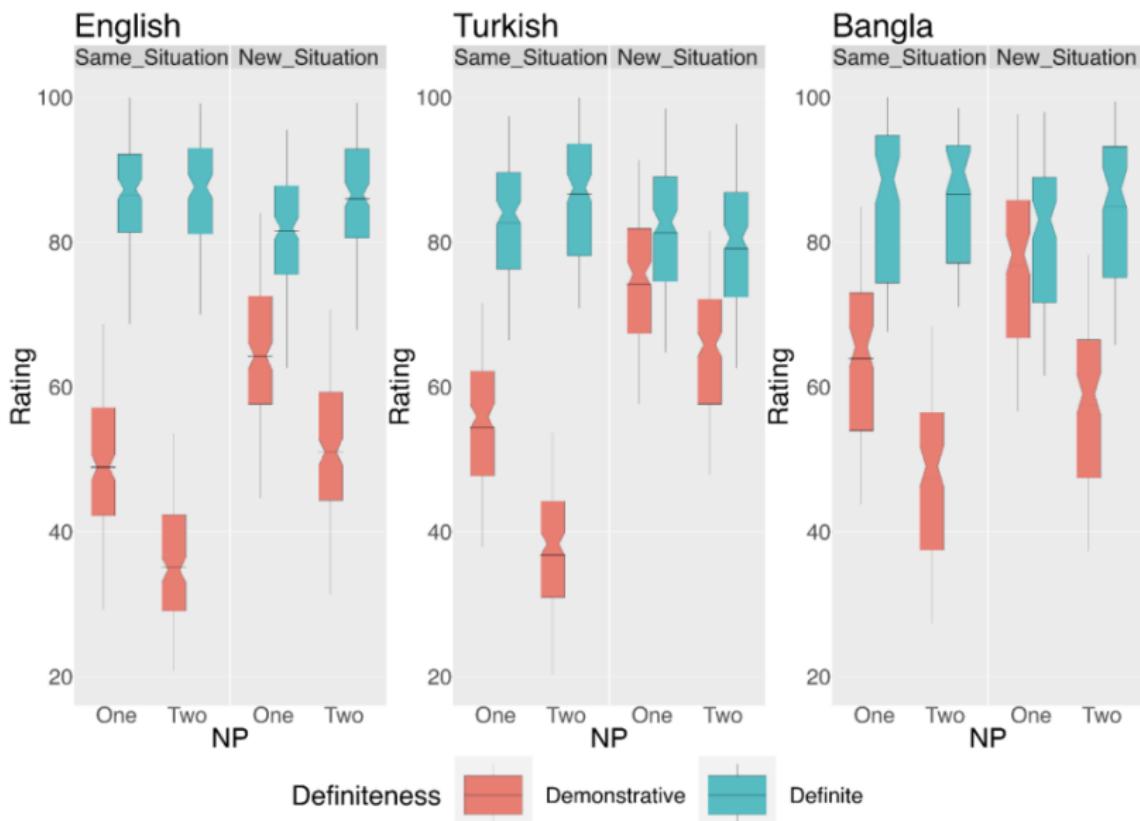
I had noticed that boy at a coffee shop yesterday.



I had noticed the boy at a coffee shop yesterday.

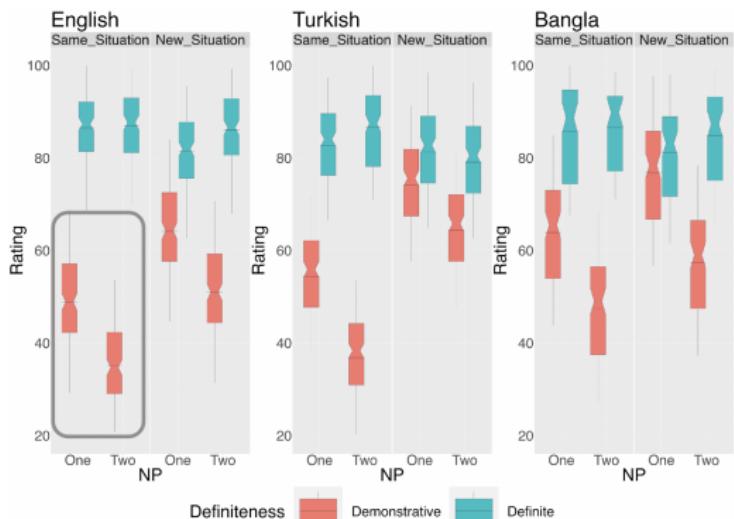


# Saha (2023) & Saha, Sağ, & Davidson (2023)



# Saha (2023) & Saha, Sağ, & Davidson (2023)

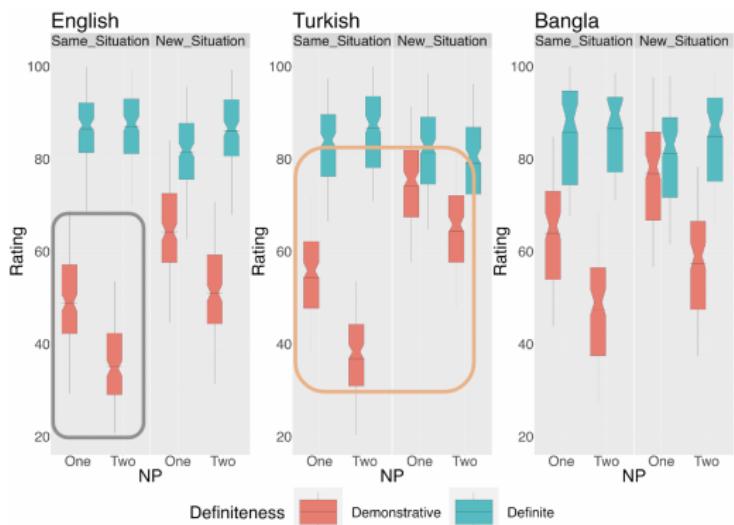
- **Demonstratives:** sensitive to the presence of a contrasting noun in the context sentence, i.e., the number of NPs (**one vs. two**)



Demonstratives  
rated significantly  
lower in NP contrast  
cases

# Saha (2023) & Saha, Sağ, & Davidson (2023)

- **Demonstratives:** sensitive to the situation of the follow-up sentence



Demonstratives rated significantly lower in NP contrast cases

Demonstratives rated significantly higher in New Situation follow-ups

## Summary: Previous studies

- Acceptability of **demonstratives** in anaphoric contexts overall seem to be correlated with
  - different/new situation (i.e., breaks the discourse coherence)
  - (lack of) NP contrast
- As for **definites**, Mandarin bare nouns seem controversial, as opposed to the consistent pattern seen in other languages.

## The Mandarin experiment

# Critical manipulation

**Our Mandarin design** (following Saha 2023 & Saha *et al.* 2023)

- (6) {[<sub>1NP</sub> yi ge nanhai]/ [<sub>2NP</sub> yi ge nanhai he yi ge nvhai]}  
one CL boy one CL boy and one CL girl  
zoujin le jiaoshi.  
walk.into PERF classroom  
'A boy/A boy and a girl walked into the classroom.'
- a. {Ø/**na ge**} nanhai zuozai qianpai.  
Ø/that CL boy sit.at front.seat  
'The/That boy sat at the front.' [Same Situation]
  - b. wo zuotian zai shudian jian guo {Ø/**na ge**} nanhai.  
I yesterday at bookstore see PERF Ø/that CL boy  
'I saw the/that boy at the bookstore yesterday.' [New Situation]

# Methods

- Latin Square 2x2x2 design crossing NP (**1 vs. 2**) and situation (**new vs. same**) across 12 scenarios
- Factors balanced
  - Syntactic position of the target nouns (half subject and half object positions)
  - Animacy of the target nouns (half animate and half inanimate)
  - Order of bare nouns (definites) and demonstratives counterbalanced
- 64 Mandarin participants recruited via Prolific Academic platform

一个男孩和一个女孩走进了教室。

我昨天在书店见过那个男孩。



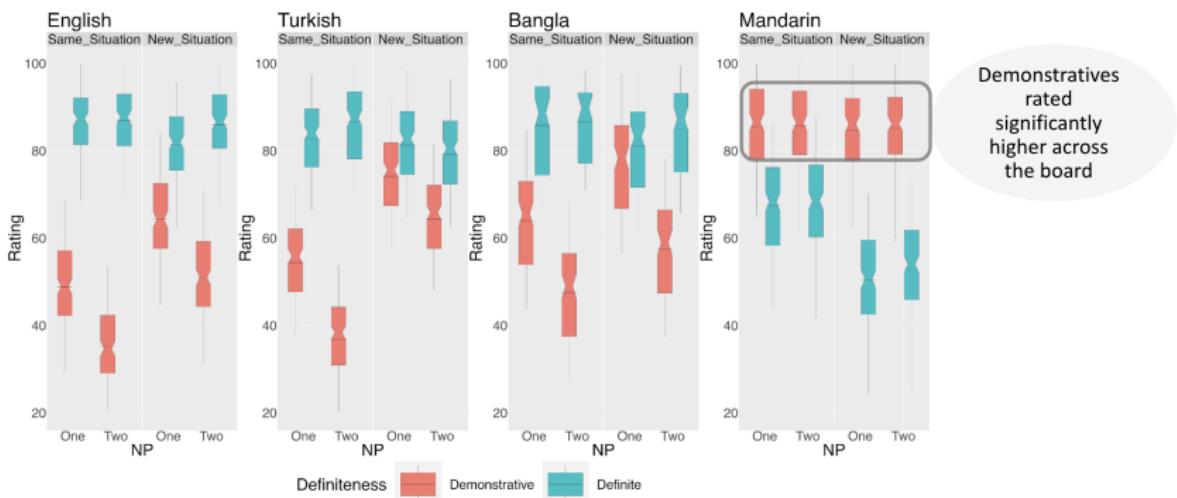
我昨天在书店见过男孩。



Figure: Screenshot of the Mandarin experiment in the 2 NP New Situation condition

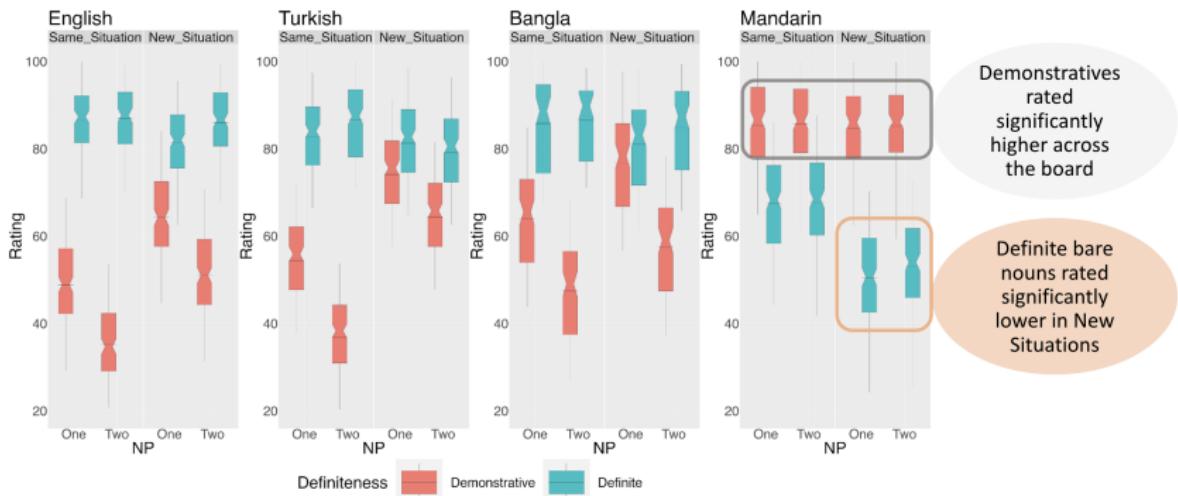
# Core findings

- ★ Mandarin data **contrast** with the consistent pattern of the paradigm in English, Turkish, and Bangla.



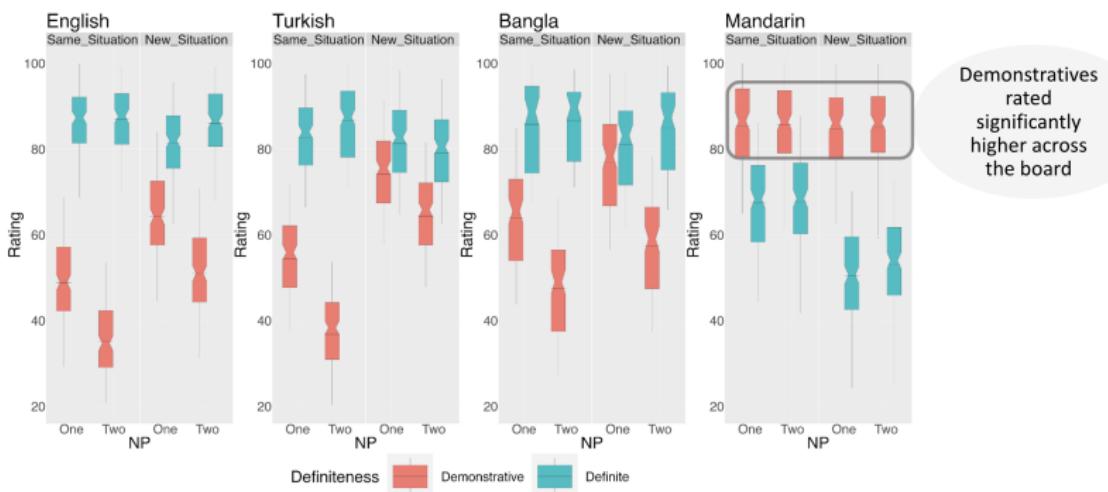
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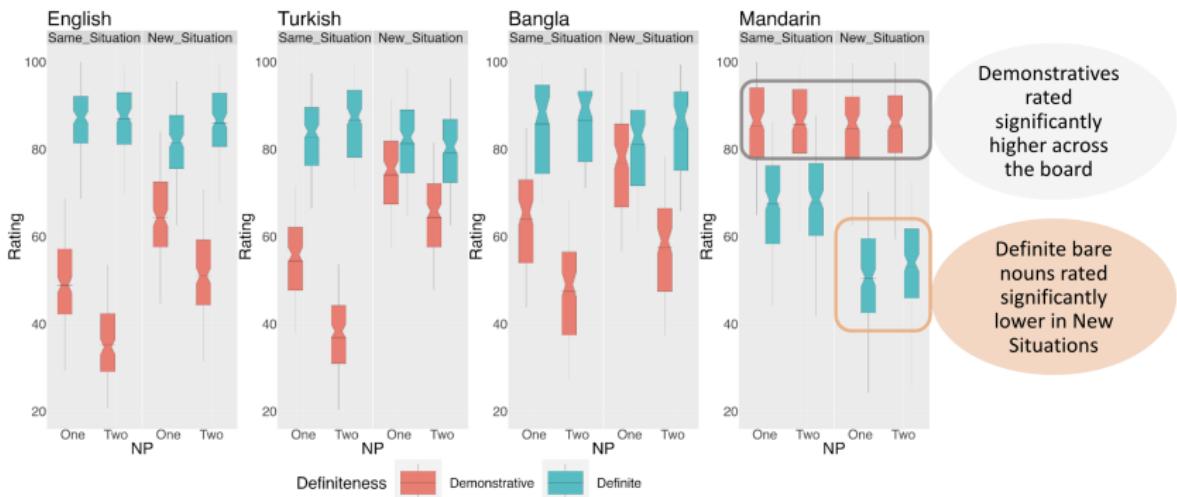
# Core findings: Demonstratives

- **Demonstratives** in Mandarin **do not** exhibit the sensitivity to discourse context seen in demonstratives in the other languages.
- ★ Whereas demonstratives in other languages show a clear effect of situation change (in line with Dayal & Jiang), we do *not* find this to be the case in Mandarin.
- ★ Mandarin demonstratives pattern, instead, with anaphoric definites in this paradigm, making them compatible with Jenks' claim of them marking *strong* definiteness.



# Core findings: Bare nouns

- ★ Bare nouns: (partly) found felicitous
    - ⇒ in line with Dayal & Jiang, Bremmers *et al.* and Simpson & Wu, contrary to the prediction of Jenks' *Index!* (blocks the use of bare nouns in anaphoric contexts)
  - ★ The acceptability of bare nouns improved in the absence of situation change.
    - ⇒ in line with Bremmers *et al.* and Simpson & Wu.
- BUT they did not reach/ surpass the acceptability of **demonstratives**.



## Analysis

# A focus-driven approach to demonstratives

**Saha, Saḡ, & Davidson (2023)**

- Definite and demonstrative determiners in anaphoric contexts:

$$(7) \quad \llbracket \text{DEF} \rrbracket = \lambda s. \lambda y. \lambda P : \exists!x [P_s(x) \wedge x = y]. \iota x [P_s(x) \wedge x = y]$$

(Schwarz 2009)

~~ takes a situation  $s$  and an index argument  $y$  besides a property  $P$  and returns the unique individual that both satisfies  $P$  and equals  $y$  in  $s$ , if defined

$$(8) \quad \llbracket \text{DEM} \rrbracket = \lambda s. \lambda y. \lambda P : \text{Maximal}(s) \wedge \exists!x [P_s(x) \wedge x = y] \wedge |P_s| > 1.$$

(building on Dayal & Jiang 2022)

~~ differs in definedness conditions:

- the existence of a unique individual that both satisfies  $P$  and equals  $y$  in  $s_1 \oplus s_2$  *uniqueness*
- the set denoted by  $P$  must have cardinality greater than 1 in  $s_1 \oplus s_2$ . *anti-uniqueness*

# A focus-driven approach to demonstratives

Saha, Sağ, & Davidson (2023)

- Definites are used in *the absence of focus* in the DP or when *focus is on the entire DP*.

- (9) a. the boy (no focus with DP) e.g. 1 NP cases  
 $[\text{DEF } 1] \text{ boy}^o = \iota x[\text{boy}(x) \wedge x = g(1)]$
- b. the BOY (as opposed to the girl) e.g. 2 NP cases  
 $[\text{DEF } 1] \text{ boy}_F^f = \{\iota x[\text{boy}(x) \wedge x = g(1)], \iota x[\text{girl}(x) \wedge x = g(2)]\}$

- Demonstratives come with *obligatory focus on the index argument*.
- (10) THAT boy (as opposed to another boy) e.g. 1 NP, New S cases  
 $[\text{DEM } 1_F] \text{ boy}^f = \{\iota x[\text{boy}(x) \wedge x = g(1)], \iota x[\text{boy}(x) \wedge x = g(3)]\}$
- (11) [OneNP A boy] entered the classroom. I had noticed that boy at a coffee shop yesterday. (New Situation)

# A focus-driven approach to demonstratives

## Demonstratives

- **Degraded in Two NP cases:** bias towards the placement of focus on the whole DP

- (12) [<sub>TwoNP</sub> A boy and a girl] entered the classroom.
- a. That boy sat down in the front row. **(Same Situation)**
  - b. I had noticed that boy at a coffee shop yesterday. **(New Situation)**
- **Degraded in Same Situation cases:** continuation with a new situation is most compatible with considering a maximal situation involving other boys
- (13) [<sub>OneNP</sub> A boy] entered the classroom.
- a. That boy sat down in the front row. **(Same Situation)**
  - b. I had noticed that boy at a coffee shop yesterday. **(New Situation)**

# Mandarin demonstratives

## How about Mandarin?

- ★ Unlike standard anaphoric demonstratives, which *mandatorily* evoke focus on the index argument, Mandarin demonstratives allow for the absence of focus on the index.
- ★ Therefore, they follow a pattern similar to definites in other languages, being acceptable across the board.

## Mandarin demonstratives vs. bare nouns

### Why a preference for demonstratives across the board?

- Mandarin sentences with bare nouns also have generic readings due to lack of tense and aspectual marking, as well as indefinite readings for postverbal bare nouns (e.g. Cheng & Sybesma 1999)
  - In competition with these bare nouns, demonstratives here are unambiguously anaphoric, driving their preference across the board.
  - In Same Situations, there is a bias towards referring to entities introduced previously; hence bare nouns fare better here as anaphors.<sup>1</sup>

<sup>1</sup>See also Simpson & Wu (2022) for a similar conclusion.

# Syntactic position of bare nouns

- **Jenks (2018):** Bare nouns are *only* felicitous as anaphors in subject positions since they are continuing topics, *not due to being strong definites*.
- **Other studies** pose differing views on the role of syntactic position in anaphoric uses of bare nouns.
  - Dayal & Jiang (2022) argue for no sensitivity to syntactic position.
  - Simpson & Wu (2022) highlight the effect of post-verbal object position.
- **Our study:** We tested for the effects of syntactic position on bare nouns and found that it had *no significant effect*, and in fact trended in the opposite direction.
- Investigating the precise role of syntactic position is left for future research.

## Conclusion

# Conclusion

- We have **not** found a dichotomy between weak and strong definiteness in Mandarin contra Jenks (2018).
  - Bare nouns used in contexts of both weak and strong definites
- But we have found that Mandarin demonstratives pattern with other definites (*not demonstratives*) when it comes to the focus/anaphora manipulation.
  - i.e., used in contexts of strong definites in addition to their deictic/other demonstrative uses

# Conclusion

- Compatible with studies of semantic change showing well-established grammaticalization clines across languages in contexts where both can occur (Diessel 1999): **demonstrative → (anaphoric) definite**
- Mandarin-specific properties (lack of tense-aspect marking, availability of generic and indefinite readings for bare nouns) contribute to this (see also Simpson & Wu 2022).
- Mandarin demonstratives are under pressure to resolve ambiguity imposed on bare nouns, and hence the observed change towards becoming a definite article.
- Turkish and Bangla demonstratives do not show a similar change due to a lack of such pressure.

# Collaborators



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Thank you!

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# References

- Ahn, Dorothy. 2019. That thesis: A competition mechanism for anaphoric expressions: Harvard University Ph.D. dissertation.
- Ahn, Dorothy. 2023. Indirectly direct: An account of demonstratives and pointing. *Linguistics and Philosophy* 45. 1345–1393.
- Arkoh, Ruby & Lisa Matthewson. 2013. A familiar definite article in Akan. *Lingua* 123. 1–30.
- Biswas, Priyanka. 2014. Reanalyzing definiteness in Bangla. In Kayla Carpenter, Oana David, Florian Lionnet, Christine Sheil, Tammy Stark & Vivian Wauters (eds.), *Proceedings of 38th Annual Meeting of the Berkeley Linguistic Society*, vol. 38, 19–29.
- Bombi, Carla. 2018. Definiteness in Akan: familiarity and uniqueness revisited. In Sireemas Maspong, Brynhildur Stefánsdóttir, Katherine Blake & Forrest Davis (eds.), *Semantics and Linguistic Theory* 28 (SALT-28), 141–160.
- Bremmers, David, Jianan Liu, Martijn van der Klis, and Bert Le Bruyn. 2022. Translation mining: Definiteness across languages (a reply to Jenks 2018). *Linguistic Inquiry* 53, no. 4: 735–752.
- Cheng, Lisa Lai-Shen & Rint Sybesma. 1999. Bare and Not-So-Bare Nouns and the Structure of NP. *Linguistic Inquiry* 30(4). 509–542.
- Dayal, Veneeta & Li Julie Jiang. 2022. The Puzzle of Anaphoric Bare Nouns in Mandarin: A Counterpoint to Index! *Linguistic Inquiry* 54(1). 147–167.
- Ebert, K. 1971. Referenz, Sprechsituation und die bestimmten Artikel in einem Nordfriesischen Dialekt (Fering), PhD thesis, Christian-Albrechts-Universität zu Kiel.

# References

- Frege, Gottlob. 1892. Über Sinn und Bedeutung. *Zeitschrift für Philosophie und philosophische Kritik* 100. 25–50.
- Heim, Irene. 1982. The Semantics of Definite and Indefinite Noun Phrases: University of Massachusetts, Amherst PhD dissertation
- Heim, Irene. 1991. Artikel und Definitheit. In *Semantik: Ein internationales Handbuch der zeitgenössischen Forschung*, 487–535. Berlin: Mouton de Gruyter.
- Hartmann, D. 1967. Studien zum bestimmten Artikel in 'Morant und Galie' und anderen rheinischen Denkmalern des Mittelalters, Wilhelm Schmitz Verlag, Giessen.
- Hartmann, D. 1982. Deixis and anaphora in German dialects: The semantics and pragmatics of two definite articles in dialectal varieties, in J. Weissenborn and W. Klein (eds), *Here and There: Cross-linguistic studies on deixis and demonstration*, John Benjamins, Amsterdam, pp. 187207.
- Heinrichs, H. M. 1954. Studien zum bestimmten Artikel in den germanischen Sprachen, Wilhelm Schmitz Verlag, Giessen.
- Himmelmann, N. 1997. Deiktikon, Artikel, Nominalphrase: zur Emergenz syntaktischer Struktur, Niemeyer, Tübingen.
- Hinterwimmer, Stefan & Umesh Patil. 2022. The interpretative options of anaphoric complex demonstratives. *Glossa: a journal of general linguistics* 7(1).

# References

- Jenks, Peter. 2018. Articulated definiteness without articles. *Linguistic Inquiry* 49(3). 501–536.
- Owusu, Augustina. 2022. Cross-categorial definiteness/familiarity: Rutgers, The State University of New Jersey Ph.D. dissertation.
- Roberts, Craige. 2003. Uniqueness in de nite noun phrases. *Linguistics and Philosophy* 26(3). 287–350.
- Russell, Bertrand. 1905. On Denoting. *Mind* 14. 479–493.
- Saha, Ankana. The anaphoric potential of demonstrative descriptions: An experimental study. Generals paper (unpublished manuscript), Harvard University.
- Saha, Ankana, Yağmur Sağı, & Kathryn Davidson. 2023. Focus on demonstratives: Experiments in English and Turkish. *Semantics and Linguistic Theory* 33 (SALT 33): 460–479.
- Schwarz, Florian. 2009. Two kinds of definites cross-linguistically: University of Massachusetts, Amherst Ph.D. dissertation.
- Schwarz, Florian. 2013. Two kinds of definites cross-linguistically. *Language and Linguistics Compass* 7(10). 534–559.
- Simpson, Andrew & Priyanka Biswas. 2016. Bare nominals, classifiers, and the representation of definiteness in Bangla. *Linguistic Analysis* 40(3-4). 167–198.
- Simpson, Andrew & Zoe Wu. 2022. Constraints on the representation of anaphoric definiteness in Mandarin Chinese: A reassessment. In Andrew Simpson (ed.), *New Explorations in Chinese Theoretical Syntax: Studies in honor of Yen-Hui Audrey Li*, 301–330. Amsterdam and Philadelphia: John Benjamins.
- Strawson, Peter F. 1950. On referring. *Mind* 59(235). 320–344.