

## Abstract

In China, many students need to use Putonghua, or Mandarin Chinese, at school but speak another vernacular at home. The use of hometown vernaculars may lead to social exclusion, non-standard usages, and cognitive burdens, which may all negatively affect academic outcomes. Other scholars suggest that vernacular usage at home does not necessarily affect Putonghua usage at school. Using data from the China Education Panel Survey, I find that Putonghua usage at home is actually associated with slightly **LOWER** exam scores in language courses.

## Putonghua Usage with Parents and Academic Performance

Hanzhang Ren

# The Politics of Languages

- ▶ Boundaries between languages and dialects are porous and socially constructed, but according to Eberhard, Simons, and Fennig (2019), out of 1.4 billion Chinese people, 1 billion speak Putonghua, or Mandarin Chinese. Others may only speak a dialect like Cantonese or another ethnic language like Uyghur.
- ▶ The Chinese government has a political interest in popularizing Putonghua to promote national unity through the education system.
- ▶ Many children need to use Putonghua at school but speak another vernacular at home, potentially speaking Putonghua with an accent (Jiankun Liu and Zhang 2020).
- ▶ Whether these children succeed at school and later get good jobs may have important implications on the reproduction of social inequalities based on family geographical origins and on the survival of vernaculars (Fishman 1985).

# Does Putonghua Usage with Parents Predict Academic Performance?

- ▶ There may be a positive association.
  - ▶ **Putonghua may be especially important for domestic migrant children who cannot use any other vernaculars in their migration destinations.**
  - ▶ A high-status vernacular leads to greater support from teachers and peers.
  - ▶ Putonghua at home may help students understand teachers, who are supposed to use Putonghua (Jiankun Liu and Zhang 2020).
  - ▶ Local expressions may enter exam responses and be deemed incorrect (Tse et al. 2007).
  - ▶ Code-switching may impose a cognitive burden (Zheng, Jie Liu, and Sun 2019).
- ▶ There may not be a positive association (might even be negative!).
  - ▶ One does not have to use Putonghua at home to use Putonghua at school.
  - ▶ The vernacular spoken at home should not have a big impact because exams test reading and writing skills.
  - ▶ Topics discussed at home are not necessarily important at school.
  - ▶ Exams in non-Putonghua areas may be written in a way less demanding of Putonghua skills.
  - ▶ Putonghua may not have the highest status in places with a strong local vernacular identity (Tse et al. 2007).

## Data and Methods

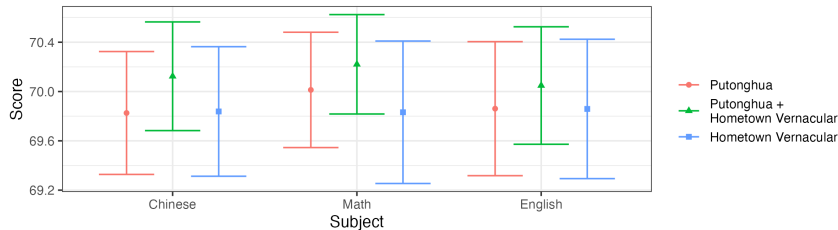
- ▶ I am using baseline data from the China Education Panel Survey (CEPS). The data is a national, multistage, and stratified sample of 438 classrooms of 7th and 9th graders, with sampling weights (NSRC 2015).
- ▶ Outcome: individual midterm scores in fall 2013, standardized within school grades to have mean scores of 70 and standard deviations of 10. The CEPS standardized the scores in this way because different schools have different exams with different maximum possible scores, which we do not know. Because of the standardization, we only need to consider class-level fixed effects.
- ▶ Expectation maximization chain imputation on the 1.8 percent of the data that are missing, done only once (Honaker, King, and Blackwell 2011).
- ▶ Calculating weighted sample averages and unweighted OLS coefficients (Lumley 2022), I want to examine how Putonghua usage with parents relates to academic performance, as well as how this relationship differs between migrants and non-migrants.

## Selected Descriptive Statistics of Unweighted Data

	P (N=6218)	P + H (N=5815)	H (N=5962)
<b>Migrant</b>	1697 (27.3%)	1542 (26.6%)	1312 (22.0%)
<b>Had Kindergarten</b>	5284 (85.6%)	4675 (80.9%)	4316 (72.7%)
<b>Han Ethnicity</b>	5839 (94.1%)	5462 (94.1%)	5087 (85.6%)
<b>Urban Hukou</b>	3889 (63.0%)	2517 (43.5%)	1593 (26.9%)
<b>Urban Residence</b>	4714 (79.2%)	3411 (60.8%)	2043 (35.8%)
<b>Rich</b>	6218 (100.0%)	5815 (100.0%)	5962 (100.0%)
<b>Max Parent Edu &gt; MS</b>	3759 (60.5%)	2729 (46.9%)	1678 (28.1%)
<b>Only Child</b>	3870 (62.2%)	2497 (42.9%)	1455 (24.4%)
<b>Both Parents Home</b>	5147 (82.8%)	4506 (77.6%)	4168 (70.1%)

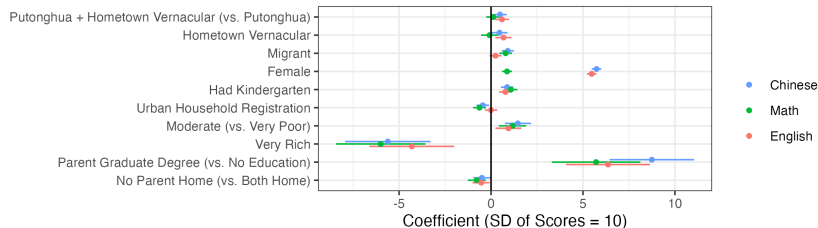
- ▶ Spoken with parents–P: Putonghua; H: Hometown vernacular
- ▶ Putonghua is associated with social privilege.
- ▶ Note that migrants are not necessarily disadvantaged. Estimations not shown here would show that the average migrants and non-migrants are respectively 6.6 and 5.8 percent likely to categorize themselves as rich.

# Scores and Putonghua Usage



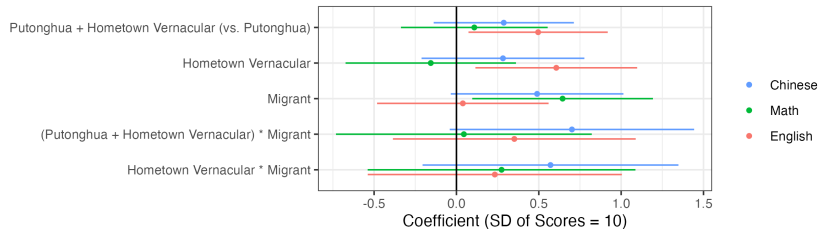
- ▶ Weighted sample averages show that the score differences associated with different levels of Putonghua usage are quite small, always less than 0.5 points when the standard deviation is set to be 10.
- ▶ We do **NOT** see that those who speak only Putonghua with parents enjoy an advantage.
- ▶ Despite being more socioeconomically disadvantaged than those who speak Putonghua only, those who speak at least some hometown vernacular appears to have average scores just as high, if not higher.

# OLS of Scores over Putonghua, Plus Controls



- ▶ Other controls not shown: an "Other" level for vernaculars, age, Han ethnicity, urban residence, other wealth levels, other levels of highest parent education, only child, one parent not home, classroom IDs.
- ▶ Accounting for other variables in the model, the usage of hometown vernaculars with parents is associated with a statistically significant **INCREASE** in Chinese and English scores. The math score increase is not statistically significant, but this might change given more data.
- ▶ The predicted magnitudes of the statistically significant increases are between 0.4 and 0.7. These are quite small, but they are large enough to offset the negative coefficient associated with having no parent at home.

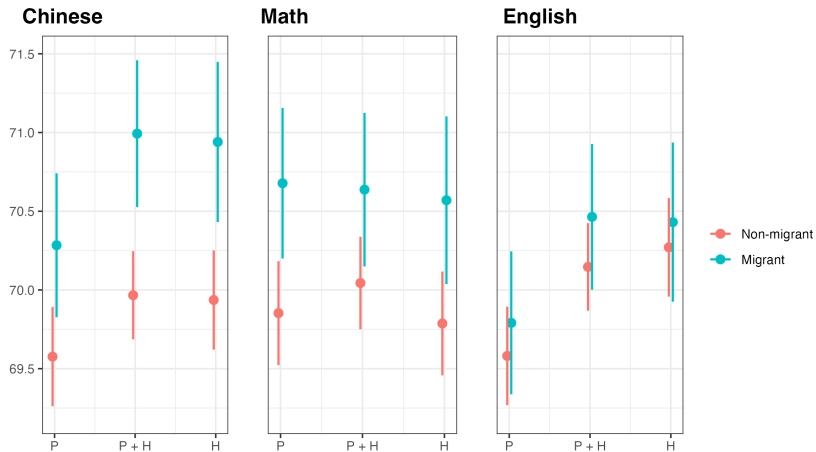
# Add Interaction Terms



- ▶ Same models as last slide, except that I added interaction terms between vernaculars and migrant.
- ▶ The interaction terms are not statistically significant, but the estimated coefficients can be as high as 0.7, suggesting that increasing the sample size might yield a statistically and substantively significant effect.
- ▶ There is little evidence suggesting that migrants experience an extra burden by speaking a hometown vernacular. In fact, the model predicts that the positive association between school grades and hometown vernaculars may be stronger for migrants.



# Margins Plot of Interaction Models



# Discussion and Conclusion

- ▶ Key findings
  - ▶ I find little evidence of a positive association between Putonghua usage with parents and exam scores for middle school students in China.
  - ▶ In fact, for two classmates with similar social backgrounds, the one speaking their hometown vernacular with their parents is more likely to do well in Chinese and English.
- ▶ Potential future directions
  - ▶ Do better imputation with multiple iterations.
  - ▶ Collect more data to learn about interaction effects.
  - ▶ Study more than just middle schoolers.
  - ▶ Get data on actual ability to speak Putonghua.
  - ▶ Does the effect of vernacular choice accumulate year by year?
  - ▶ Does Putonghua actually enjoy a higher status than hometown vernaculars?
  - ▶ Is translation between Putonghua and hometown vernacular an intellectual exercise that improves academic performance in language classes?
  - ▶ Does speaking a hometown vernacular at home make students self-conscious about their language use in Putonghua-dominated schools? Does this lead to self-correction that improves language grades?



# References I

-  Eberhard, David M., Gary F. Simons, and Charles D. Fennig (2019). “Chinese, Mandarin”. In: *Ethnologue: Languages of the World*. 22nd ed. Dallas, TX: SIL International. URL: <https://www.ethnologue.com/22/language/cmn> (visited on 03/19/2023).
-  Fishman, Joshua A. (1985). “Macrosociolinguistics and The Sociology of Language in the Early Eighties”. In: *Annual Review of Sociology* 11.1. eprint: <https://doi.org/10.1146/annurev.so.11.080185.000553>, pp. 113–127. DOI: 10.1146/annurev.so.11.080185.000553. URL: <https://doi.org/10.1146/annurev.so.11.080185.000553> (visited on 03/19/2023).
-  Honaker, James, Gary King, and Matthew Blackwell (2011). “Amelia II: A Program for Missing Data”. In: *Journal of Statistical Software* 45.7, pp. 1–47. ISSN: 1548-7660. DOI: 10.18637/jss.v045.i07. URL: <https://doi.org/10.18637/jss.v045.i07> (visited on 03/22/2023).

## References II

-  Liu, Jiankun and Yunliang Zhang (2020). “Dialect Ability and Academic Performance of Migrant Children—Evidence from the China Education Panel Survey”. In: *Chinese Journal of Sociology* 40.5, pp. 213–236. ISSN: 1004-8804. DOI: [10.15992/j.cnki.31-1123/c.2020.05.009](https://doi.org/10.15992/j.cnki.31-1123/c.2020.05.009). URL: <https://doi.org/10.15992/j.cnki.31-1123/c.2020.05.009> (visited on 03/18/2023).
-  Lumley, Thomas (2022). *Package 'survey'*. URL: <https://cran.r-project.org/web/packages/survey/survey.pdf> (visited on 03/23/2023).
-  NSRC (2015). *China Education Panel Survey (2013-2014 School Year) Baseline Survey*. Chinese National Survey Data Archive. URL: <http://www.cnsda.org/index.php?r=projects/view&id=72810330> (visited on 03/19/2023).

## References III

-  Tse, Shek-kam et al. (2007). “The Influence of the Language that Hong Kong Primary School Students Habitually Speak at Home on their Chinese Reading Ability in School”. In: *Journal of Multilingual and Multicultural Development* 28.5. Publisher: Routledge \_eprint: <https://doi.org/10.2167/jmmd529.1>, pp. 400–417. ISSN: 0143-4632. DOI: 10.2167/jmmd529.1. URL: <https://doi.org/10.2167/jmmd529.1> (visited on 03/18/2023).
-  Zheng, Lei, Jie Liu, and Zhijun Sun (2019). “Does Speaking Dialect at Home Influence Students’ Cognitive Development? Evidence from CEPS”. In: *China Economics of Education Review* 4.6, pp. 79–92. URL: [http://jyjjpl.bnu.edu.cn/ch/reader/view\\_abstract.aspx?file\\_no=20190605](http://jyjjpl.bnu.edu.cn/ch/reader/view_abstract.aspx?file_no=20190605) (visited on 03/18/2023).