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# The sociolinguistics of rhotacization in the Beijing speech community

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## References

- Adank, P., Smits, R., & van Hout, R. (2004). A comparison of vowel normalization procedures for language variation research. *The Journal of the Acoustical Society of America*, *116*(5), 3099–3107. <https://doi.org/10.1121/1.1795335>
- Alwan, A., Narayanan, S., & Haker, K. (1997). Toward articulatory-acoustic models for liquid approximants based on MRI and EPG data. Part II. The rhotics. *The Journal of the Acoustical Society of America*, *101*(2), 1078–1089.
- Babel, M. (2010). Dialect divergence and convergence in New Zealand English. *Language in Society*, *39*(4), 437–456. <https://doi.org/10.1017/S0047404510000400>
- Babel, M. (2012). Evidence for phonetic and social selectivity in spontaneous phonetic imitation. *Journal of Phonetics*, *40*(1), 177–189. <https://doi.org/10.1016/j.wocn.2011.09.001>
- Babel, M., McAuliffe, M., & Haber, G. (2013). Can mergers-in-progress be unmerged in speech accommodation? *Frontiers in Psychology*, *4*. <https://doi.org/10.3389/fpsyg.2013.00653>
- Babel, M., McGuire, G., Walters, S., & Nicholls, A. (2014). Novelty and social preference in phonetic accommodation. *Laboratory Phonology*, *5*(1), 123–150. <https://doi.org/10.1515/lp-2014-0006>
- Ball, M. J. (Ed.). (2010). *The Routledge handbook of sociolinguistics around the world*. Routledge.
- Bao, Z. (1990). Fanqie Languages and Reduplication. *Linguistic Inquiry*, *21*(3), 317–350.
- Bao, Z. (1996). The Syllable in Chinese. *Journal of Chinese Linguistics*, *24*(2), 312–354.
- Baranowski, M. (2013). Sociophonetics. In R. Bayley, R. Cameron, & C. Lucas (Eds.), *The Oxford Handbook of Sociolinguistics* (Vol. 1). Oxford University Press. <https://doi.org/10.1093/oxfordhb/9780199744084.013.0020>
- Bayley, R. (2013). Variationist Sociolinguistics. In R. Bayley, R. Cameron, & C. Lucas (Eds.), *The Oxford Handbook of Sociolinguistics* (Vol. 1). Oxford University Press. <https://doi.org/10.1093/oxfordhb/9780199744084.013.0001>
- Bayley, R., & Lucas, C. (Eds.). (2007). *Sociolinguistic variation: Theories, methods, and applications*. Cambridge University Press.
- Beijing Municipal Bureau of Statistics. (2021, May 19). *Beijing shi di qi ci quanguo renkou pucha zhuyao shuju qingkuang [Important data of the seventh national census in Beijing]*. [http://tjj.beijing.gov.cn/zxfb/202105/t20210519\\_2392526.html](http://tjj.beijing.gov.cn/zxfb/202105/t20210519_2392526.html)
- Beijing Municipal Bureau Statistics. (2020). *Beijing Statistical Yearbook 2020*. China Statistics Press.

- Bradley, T. G., & Willis, E. W. (2012). Rhotic variation and contrast in Veracruz Mexican Spanish. *Estudios de Fonética Experimental*, 43–74.
- Cao, Y. (2004). Erhua, er wei he er zhui deng shuyu zai butong pingmian shang zhi zhuanhuan shiyong—Jian lun “Xer” de guifan wenti [The use of the terms—Rhotacization, r-coda and r-suffix—In different levels: Discussing the standardization of the “Xer” Concurrently]. *Journal of RTV University (Philosophy & Social Sciences)*, 03, 101–104.
- Chambers, J. K. (2008). *Sociolinguistic theory: Linguistic variation and its social significance* (3rd ed.). Blackwell.  
<http://homes.chass.utoronto.ca/~chambers/CV.pdf>
- Chan, K. W. (1994). *Cities with invisible walls: Reinterpreting urbanization in post-1949 China*. Oxford University Press.
- Chan, K. W. (1996). Post-Mao China: A Two-Class Urban Society in the Making. *International Journal of Urban and Regional Research*, 20(1), 134–150.  
<https://doi.org/10.1111/j.1468-2427.1996.tb00305.x>
- Chen, P. (1999). *Modern Chinese: History and sociolinguistics*. Cambridge University Press.
- Chen, W. (1955). *Summary of the Symposium on the Standardization of Modern Chinese*. Secretariat of the Symposium on the Standardization of Modern Chinese, Beijing.
- Chen, Y. (1980). *Yuyan yu shehui shenghuo—Shehui yuyanxue zhaji [Language and social life—Notes on Sociolinguistics]*. Joint Publishing.
- Chen, Y. (1983). *Shehui yuyanxue [Sociolinguistics]*. Xuelin chubanshe.
- Cheshire, J., & Fox, S. (2009). Was/were variation: A perspective from London. *Language Variation and Change*, 21(1), 1–38.  
<https://doi.org/10.1017/S0954394509000015>
- Department of Language Application and Administration of MOE. (2011, November 25). ‘Putonghua changyong qingsheng ci cibiao’ xiangmu tongguo jiexiang jiating [The projects of “The vocabulary of common rhotacized words in Standard Chinese” and “The vocabulary of common rhotacized words in Standard Chinese” are approved].  
[http://www.cltt.org/tuiguangputonghua/tp\\_I\\_xueshuyanjiu/20160830225.html](http://www.cltt.org/tuiguangputonghua/tp_I_xueshuyanjiu/20160830225.html)
- Dickson, V., & Hall-Lew, L. (2017). Class, Gender, and Rhoticity: The Social Stratification of Non-Prevocalic /r/ in Edinburgh Speech. *Journal of English Linguistics*, 45(3), 229–259.  
<https://doi.org/10.1177/0075424217718024>
- Dirlik, A., & Zhang, X. (2000). Introduction. In *Introduction: Postmodernism and China* (pp. 1–18). Duke University Press.  
<https://doi.org/10.1515/9780822380221-001>
- Dong, J. (2009). ‘Isn’t it enough to be a Chinese speaker’: Language ideology and migrant identity construction in a public primary school in Beijing. *Language & Communication*, 29(2), 115–126.  
<https://doi.org/10.1016/j.langcom.2009.01.002>
- Dong, J. (2010). The enregisterment of Putonghua in practice. *Language & Communication*, 30(4), 265–275.

- <https://doi.org/10.1016/j.langcom.2010.03.001>
- Dong, J., & Blommaert, J. (2009). Space, scale and accents: Constructing migrant identity in Beijing. *Multilingua*, 28(1), 1–24.  
<https://doi.org/10.1515/mult.2009.001>
- Duanmu, S. (1990). *A formal study of syllable, tone, stress and domain in Chinese languages* [Doctoral dissertation, Massachusetts Institute of Technology]. <https://dspace.mit.edu/bitstream/handle/1721.1/13646/24289692-MIT.pdf?sequence=2>
- Duanmu, S. (2004). A corpus study of Chinese regulated verse: Phrasal stress and the analysis of variability. *Phonology*, 21(1), 43–89.
- Duanmu, S. (2007). *The phonology of standard Chinese* (2nd ed.). Oxford University Press.
- Duanmu, S. (2014). Syllable structure and stress. In C. T. J. Huang, Y. H. A. Li, & A. Simpson (Eds.), *The handbook of Chinese Linguistics* (1st ed., Vol. 16, pp. 422–442). John Wiley & Sons, Incorporated.
- Fang, C. (2018). How has the Chinese economy capitalised on the demographic dividend during the reform period? In C. Fang, R. Garnaut, & L. Song (Eds.), *China's 40 Years of Reform and Development* (pp. 235–256). ANU Press.  
<https://www.jstor.org.ezproxy.leidenuniv.nl:2048/stable/j.ctv5cgbnk.21>
- Feng, W., Zuo, X., & Ruan, D. (2002). Rural Migrants in Shanghai: Living under the Shadow of Socialism. *The International Migration Review*, 36(2), 520–545.
- Garnaut, R. (Ed.). (2018). *China's 40 years of reform and development, 1978-2018 / edited by Ross Garnaut, Ligang Song and Cai Fang*. Australian National University Press.
- Garnier, M., Lamalle, L., & Sato, M. (2013). Neural correlates of phonetic convergence and speech imitation. *Frontiers in Psychology*, 4.  
<https://doi.org/10.3389/fpsyg.2013.00600>
- Garrett, P. (2010). *Attitudes to Language*. Cambridge University Press.  
<https://doi.org/10.1017/CBO9780511844713>
- Garrett, P., Coupland, N., & Williams, A. (2003). *Investigating Language Attitudes* (1st ed.). University of Wales Press; JSTOR.  
<http://www.jstor.org/stable/j.ctt9qhc23>
- Gentilucci, M., & Bernardis, P. (2007). Imitation during phoneme production. *Neuropsychologia*, 45(3), 608–615.  
<https://doi.org/10.1016/j.neuropsychologia.2006.04.004>
- Giles, H. (1973). Accent Mobility: A Model and Some Data. *Anthropological Linguistics*, 15(2), 87–105.
- Giles, H., & Coupland, N. (1991). *Language: Context and consequences*. Open University Press.
- Giles, H., & Powesland, P. F. (1975). *Speech style and social evaluation*. Academic Press.

- Giles, H., & Rakić, T. (2014). Language Attitudes. In T. M. Holtgraves (Ed.), *The Oxford Handbook of Language and Social Psychology*. Oxford University Press. <https://doi.org/10.1093/oxfordhb/9780199838639.013.030>
- Goldinger, S. D., & Azuma, T. (2004). Episodic memory reflected in printed word naming. *Psychonomic Bulletin & Review*, 11(4), 716–722. <https://doi.org/10.3758/BF03196625>
- Horner, C. (2015). Where No Man Has Gone Before: Urban China in the Twenty-First Century. In *Rising China and Its Postmodern Fate* (Vol. 2, pp. 128–190). Brill. [https://doi.org/10.1163/9789004306288\\_005](https://doi.org/10.1163/9789004306288_005)
- Hu, B., & Zhang, K. (2018). New urbanisation in China: A multidimensional perspective—Empirical analysis of 289 prefecture and higher-level cities. In R. Garnaut, L. Song, & C. Fang (Eds.), *China's 40 Years of Reform and Development* (pp. 455–486). ANU Press. <https://www.jstor.org/stable/j.ctv5cgbnk.31>
- Hu, Y. (1987). Beijing hua shehui diaocha [A social survey in Beijing Mandarin]. In *Beijing hua chutan [A Preliminary Study of Beijing Dialect]* (pp. 38–73). The Commercial Press.
- Hu, Y. (2011). *Xiandai hanyu (chong ding ben) [Modern Chinese (renewal edition)]* (7th ed.). Shanghai Jiaoyu Chubanshe.
- Huang, B., & Liao, X. (2017). *Xiandai hanyu [Modern Chinese]* (6th ed., Vol. 1). Gaodeng Jiaoyu Chubanshe.
- Huang, C. T. J., Li, Y. H. A., & Simpson, A. (2014). *The Handbook of Chinese Linguistics*. John Wiley & Sons, Incorporated. <http://ebookcentral.proquest.com/lib/leidenuniv/detail.action?docID=1634265>
- Jing, S. (2005). Erhua ci bianyi he bianhua de shehui yuyanxue yanjiu [A sociolinguistic study on the the variants and variation of rhotacization]. *Xiuci xuexi*, 02, 10–16.
- Kassambara, A. (2020). *ggpubr: “ggplot2” Based Publication Ready Plots*. <https://CRAN.R-project.org/package=ggpubr>
- Kendall, T., & Fridland, V. (2021). Sociophonetics and Its Methods: Foundations. In *Sociophonetics* (pp. 12–39). Cambridge University Press. <https://doi.org/10.1017/9781316809709.003>
- Kuznetsova, A., Brockhoff, P. B., & Christensen, R. H. B. (2017). lmerTest Package: Tests in Linear Mixed Effects Models. *Journal of Statistical Software*, 82(13), 1–26. <https://doi.org/10.18637/jss.v082.i13>
- Kwong, J. (2011). Education and identity: The marginalisation of migrant youths in Beijing. *Journal of Youth Studies*, 14(8), 871–883. <https://doi.org/10.1080/13676261.2011.607435>
- Labov, W. (1963). The Social Motivation of a Sound Change. *Word*, 19(3), 273–309. <https://doi.org/10.1080/00437956.1963.11659799>
- Labov, W. (1972a). *Sociolinguistic patterns*. University of Pennsylvania Press.
- Labov, W. (1972b). Some principles of linguistic methodology. *Language in Society*, 1(1), 97–120.

- Labov, W. (1984). Field methods of the Project on Linguistic Change and Variation. In J. Baugh & J. Sherzer, *Language in Use: Readings in Sociolinguistics* (pp. 28–66). Englewood Cliffs: Prentice Hal.
- Labov, W. (2006). *The social stratification of English in New York City* (2nd ed.). Cambridge University Press.
- Lee, W. O., & Qi, J. (2021). From lost identity to identity grafting: The second generation migrant workers in Beijing. *Journal of Educational Change*, 22(2), 191–220. <https://doi.org/10.1007/s10833-020-09387-y>
- Lee, W.-S., & Zee, E. (2003). Standard Chinese (Beijing). *Journal of the International Phonetic Association*, 33(1), 109–112. <https://doi.org/10.1017/S0025100303001208>
- Li, M. (1980). “Er-hua” qiantan. *Yuyan Jiaoxue Yu Yanjiu*, 1, 57–66.
- Li W. (2013). From “Floating Population” to “Guest Beijinger”: Identity Formation of Migrant Workers in Beijing. 33, 91–104.
- Li, W. (2013). “Hukou” Status, Place Affiliation and Identity Formation: The Case of Migrant Workers in Metropolitan Beijing. *Procedia Environmental Sciences*, 17, 842–851. <https://doi.org/10.1016/j.proenv.2013.02.102>
- Liang, S. (2015). *Language Attitudes and Identities in Multilingual China: A Linguistic Ethnography*. Springer International Publishing. <https://doi.org/10.1007/978-3-319-12619-7>
- Liang, Z. (2001). The Age of Migration in China. *Population and Development Review*, 27(3), 499–524.
- Lim, J. (2013, September 20). *Postmodernism and Its Effects on China—ChinaSource* <https://www.chinasource.org/resource-library/articles/postmodernism-and-its-effects-on-china/>
- Lin, T. (1982). Beijing hua erhua yun geren duyin chayi wenti [Issues on the erhua divergences of intra-speakers in Beijing Mandarin]. *Yuwen yanjiu*, 2, 9–14.
- Lin, T., & Shen, J. (1995). Beijing hua erhua yun de yuyin fenqi [The divergences of rhotacization in Beijing Mandarin]. *Zhongguo Yuwen*, 3, 170–179.
- Lin, Y.-H. (2007a). *The sounds of Chinese*. Cambridge University Press.
- Lin, Y.-H. (2007b). *The Sounds of Chinese with Audio CD* (Vol. 1). Cambridge University Press.
- Lindau, M. (1985). The story of /r/. In P. Ladefoged & V. Fromkin (Eds.), *Phonetic linguistics: Essays in honor of Peter Ladefoged* (pp. 157–168). Academic Press.
- Lobanov, B. M. (1971). Classification of Russian vowels spoken by different listeners. *Journal of the Acoustic Society of America*, 49(2B), 606–608.
- Maddieson. (1984). *Patterns of Sounds*. Cambridge University Press. <https://doi.org/10.1017/CBO9780511753459>
- Maddieson, I., & Ladefoged, P. (1996). *The sounds of the world’s languages*. Blackwell Publishing.
- Mantell, J. T., & Pfordresher, P. Q. (2013). Vocal imitation of song and speech. *Cognition*, 127(2), 177–202. <https://doi.org/10.1016/j.cognition.2012.12.008>

- Meyerhoff, M. (2011). *Introducing sociolinguistics* (2nd ed.). Routledge.
- Meyerhoff, M., Adachi, C., Nanbakhsh, G., & Strycharz, A. (2011). Sociolinguistic Fieldwork. In *The Oxford handbook of linguistic fieldwork*. Oxford University Press.  
<https://doi.org/10.1093/oxfordhb/9780199571888.013.0006>
- Milroy, L. (1980). *Language and social networks*. Blackwell.
- Milroy, L., & Gordon, M. J. (2003). *Sociolinguistics: Method and interpretation*. Blackwell Pub.
- Namy, L. L., Nygaard, L. C., & Sauerteig, D. (2002). Gender differences in vocal accommodation: The role of perception. *Journal of Language and Social Psychology, 21*(4), 422–432.
- National Bureau of Statistics. (2004, December 31). *Cong shehui lingyu kan Beijing shi kechixu fazhan de zhuyao maodun [The principal contradiction of the sustainable development of Beijing from the perspective of social areas]*. [http://www.stats.gov.cn/ztc/ztfx/fxbg/200412/t20041230\\_15227.html](http://www.stats.gov.cn/ztc/ztfx/fxbg/200412/t20041230_15227.html)
- Nearey, T. M. (1977). *Phonetic Feature Systems for Vowels*. University of Alberta. Reprinted 1978 by the Indiana University Linguistics Club.
- Ning, W. (1997). The Mapping of Chinese Postmodernity. *Boundary 2, 24*(3), 19–40. <https://doi.org/10.2307/303705>
- Norman, J. (2003). The Chinese dialects: Phonology. *The Sino-Tibetan Languages, 3*, 72–83.
- Pardo, J. S. (2006). On phonetic convergence during conversational interaction. *The Journal of the Acoustical Society of America, 119*(4), 2382–2393. <https://doi.org/10.1121/1.2178720>
- Pardo, J. S. (2013). Measuring phonetic convergence in speech production. *Frontiers in Psychology, 4*. <https://doi.org/10.3389/fpsyg.2013.00559>
- Pardo, J. S., Gibbons, R., Suppes, A., & Krauss, R. M. (2012). Phonetic convergence in college roommates. *Journal of Phonetics, 40*(1), 190–197. <https://doi.org/10.1016/j.wocn.2011.10.001>
- Pardo, J. S., Jordan, K., Mallari, R., Scanlon, C., & Lewandowski, E. (2013). Phonetic convergence in shadowed speech: The relation between acoustic and perceptual measures. *Journal of Memory and Language, 69*(3), 183–195. <https://doi.org/10.1016/j.jml.2013.06.002>
- Pardo, J. S., Urmanche, A., Wilman, S., & Wiener, J. (2017). Phonetic convergence across multiple measures and model talkers. *Attention, Perception, & Psychophysics, 79*(2), 637–659. <https://doi.org/10.3758/s13414-016-1226-0>
- Peng, Z. (2002). Beijing diming zhong bufen tongming de erhua qingkuang [An Investigation on the Retroflex Suffixation of Some General Place Names in Beijing]. *Yuyan Jiaoxue Yu Yanjiu, 1*, 67–75.
- Peng, Z. (2003). Beijing hua erhua ci zai Beijing diqu zhuyao dianshi xinwen zhong de shiyong qingkuang diaocha [An investigation of rhotacization in Beijing Mandarin in the main TV news in Beijing]. *Zhongguo Shehui Yuyanxue, 2*, 67–70.

- Peng, Z. (2004). *Beijing hua erhua ci yanjiu [A study on rhotacization in Beijing Mandarin]* [Doctoral dissertation, Beijing Language and Culture University].  
<http://chn.oversea.cnki.net/KCMS/detail/detail.aspx?dbcode=CDFD&dbname=CDFD9908&filename=2004102219.nh&v=wJLY0f4KMVBVGkq3SiSjKaH%25mmd2B%25mmd2FSG%25mmd2BnKE3cPdqiPjiksuffjigYxdhuyJWo8Z1cBLo%25mmd2F>
- Postma-Nilsenová, M., & Postma, E. (2013). Auditory perception bias in speech imitation. *Frontiers in Psychology, 4*.  
<https://doi.org/10.3389/fpsyg.2013.00826>
- Preston, D. R., & Niedzielski, N. (Eds.). (2010). Chapter 2. Social and Phonetic Conditioners on the Frequency and Degree of “intrusive /r/” in New Zealand English. In *Trends in Linguistics. Studies and Monographs [TiLSM]*. DE GRUYTER. <https://doi.org/10.1515/9781934078068.1.41>
- Qian, Z. (1995). Lun erhua [A discussion about rhotacization]. *Zhongguo Yuyan Xuebao, 5*, 124–140.
- R Core Team. (2020). *R: A Language and Environment for Statistical Computing*. R Foundation for Statistical Computing. <https://www.R-project.org/>
- Ramsey, S. R. (1987). *The languages of China*. Princeton University Press.
- Ritchie, H., & Roser, M. (2018). *Urbanization*. Our World in Data.  
<https://ourworldindata.org/urbanization>
- Sanchez, K., Miller, R. M., & Rosenblum, L. D. (2010). Visual Influences on Alignment to Voice Onset Time. *Journal of Speech, Language, and Hearing Research, 53*(2), 262–272. [https://doi.org/10.1044/1092-4388\(2009/08-0247\)](https://doi.org/10.1044/1092-4388(2009/08-0247))
- Sankoff, G., & Blondeau, H. (2007). Language Change across the Lifespan: /R/ in Montreal French. *Language, 83*(3), 560–588.
- Sankoff, G., & Blondeau, H. (2010). Instability of the [r]~[R] alternation in Montreal French: The conditioning of a sound change in progress. *Van de Velde, H., van Hout, R., Demolin, D. & Zonnevelde, W.(Éd.), Variation: Sociogeographic, Phonetic and Phonological Characteristics of/r/, Amsterdam: John Benjamins*.
- Schiller, N. (1998). The Phonetic Variation of German /r/. In B. M & F. N. (Eds.), *Variation und Stabilität in der Wortstruktur. Untersuchungen zu Entwicklung, Erwerb und Varietäten des Deutschen und anderer Sprachen* (Germanistische Linguistik 141-142, pp. 261–287). Olms.
- Schilling, N. (2013). *Sociolinguistic Fieldwork*. Cambridge University Press.
- Schulze, M., & Krättschmer-Hahn, R. (2014). Relative Deprivation Theory. In A. C. Michalos (Ed.), *Encyclopedia of Quality of Life and Well-Being Research* (pp. 5443–5445). Springer Netherlands. [https://doi.org/10.1007/978-94-007-0753-5\\_2457](https://doi.org/10.1007/978-94-007-0753-5_2457)
- Schützler, O. (2010). Statistical approaches to hierarchical data in sociophonetics: The case of variable rhoticity in Scottish Standard English. *CamLing 2010: Proceedings of the Sixth Cambridge Postgraduate Conference in Language Research, 11*.



- Sebregts, K. (2015). *The sociophonetics and phonology of Dutch r* [Doctoral dissertation]. Utrecht University.
- Shen, J. (2013). Increasing internal migration in China from 1985 to 2005: Institutional versus economic drivers. *Habitat International*, 39, 1–7. <https://doi.org/10.1016/j.habitatint.2012.10.004>
- Shi, M. (2020). *Consonant and lexical tone interaction—Evidence from two Chinese dialects* [Doctoral dissertation, Leiden University]. <https://www.lotpublications.nl/consonant-and-lexical-tone-interaction-evidence-from-two-chinese-dialects>
- Shockley, K., Sabadini, L., & Fowler, C. A. (2004). Imitation in shadowing words. *Perception & Psychophysics*, 66(3), 422–429. <https://doi.org/10.3758/BF03194890>
- Smakman, D. (2006). *Standard Dutch in the Netherlands: A sociolinguistic and phonetic description*. LOT.
- Smakman, D. (2018). *Discovering sociolinguistics: From theory to practice*. Palgrave Macmillan.
- Smakman, D., & Heinrich, P. (2017). *Urban sociolinguistics: The city as a linguistic process and experience* (1st ed.). Routledge.
- Sun, D. (1991). Beijing hua bufen erhua yun duyin diaocha [On investigation on some rhotacization in Beijing Mandarin]. *Yuyan Jiaoxue Yu Yanjiu*, 4, 56–71.
- Sun, X. (1992). Bidu erhua ci yanjiu baogao (jielu ) [A research report about the must-rhotacized words]. *Yuwen Jianshe*, 08, 30–33.
- Tagliamonte, S. (2012). *Variationist Sociolinguistics: Change, Observation, Interpretation*. Wiley-Blackwell.
- Thomas, E. R., & Tyler, K. (2007). *NORM: The vowel normalization and plotting suite*. <http://lingtools.uoregon.edu/norm/>
- Trudgill, P. (1972). Sex, covert prestige and linguistic change in the urban British English of Norwich. *Language in Society*, 1(2), 179–195. <https://doi.org/10.1017/S0047404500000488>
- tutor2u. (2020, April 14). *Theoretical Debates in Sociology: Postmodernity / Postmodernism (Sociology Theory & Methods)*. <https://www.youtube.com/watch?v=ZHBNTvIWczU>
- United Nations. (2018). *World Urbanization Prospects—Population Division—United Nations*. <https://population.un.org/wup/>
- Vallabha, G. K., & Tuller, B. (2004). Perceptuomotor bias in the imitation of steady-state vowels. *The Journal of the Acoustical Society of America*, 116(2), 1184–1197. <https://doi.org/10.1121/1.1764832>
- van de Velde, H., & van Hout, R. (1999). The Pronunciation of (r) in Standard Dutch. *Linguistics in the Netherlands*, 16, 177–188. <https://doi.org/10.1075/avt.16.16van>
- Van de Velde, H., & van Hout, R. (2001). Patterns of /r/ variation. In H. Van de Velde & R. van Hout (Eds.), *'r-atics. Sociolinguistic, phonetic and phonological characteristics of /r/*. Université Libre de Bruxelles.

- Walker, A., & Campbell-Kibler, K. (2015). Repeat what after whom? Exploring variable selectivity in a cross-dialectal shadowing task. *Frontiers in Psychology*, 6. <https://doi.org/10.3389/fpsyg.2015.00546>
- Wang, H., & Yuan, Z. (2013). The promotion of Putonghua (Mandarin Chinese): An overview. In Y. Li (Ed.), *The Language Situation in China* (Vol. 1, pp. 26–39). De Gruyter Mouton.
- Wang, L. (2005). Erhua guifan zonglun [A comprehensive study of the standardization of erhua]. *Applied linguistics*, 3, 46–54.
- Wang, L. (2014). Shenfen rentong yu erhua shiyong—Yi Beijing erhua wei li. *Jinan Journal (Philosophy and Social Sciences)*, 3, 116–121.
- Wang, Y., Pei, F., Zhai, F., & Gao, Q. (2019). Academic performance and peer relations among rural-to-urban migrant children in Beijing: Do social identity and self-efficacy matter? *Asian Social Work and Policy Review*, 13(3), 263–273. <https://doi.org/10.1111/aswp.12179>
- Wickham, H. (2016). *ggplot2: Elegant Graphics for Data Analysis*. Springer-Verlag New York. <https://ggplot2.tidyverse.org>
- Xu, H. (2019). Putonghua as “admission ticket” to linguistic market in minority regions in China. *Language Policy*, 18(1), 17–37. <https://doi.org/10.1007/s10993-018-9462-x>
- Yang, C. (2006). Jinnian lai hai neiwai hanyu jieyin guishu yanjiu zongshu [An analytic review of research on the status of the prenuclear glides in Mandarin Chinese]. *Contemporary Linguistics*, 2, 144–155.
- Yu, A. C. L., Abrego-Collier, C., & Sonderegger, M. (2013). Phonetic Imitation from an Individual-Difference Perspective: Subjective Attitude, Personality and “Autistic” Traits. *PLOS ONE*, 8(9), e74746. <https://doi.org/10.1371/journal.pone.0074746>
- Zhang, J. (2014). *A Sociophonetic Study on Tonal Variation of the Wúxī and Shànghǎi Dialects* [Dissertation, Utrecht University]. <http://localhost/handle/1874/300806>
- Zhang, M. (2016). *Whose Beijing? The construction of identity and exclusion in an era of social change* [Master’s thesis, Boston University]. <https://www.proquest.com/docview/1845618605/abstract/EA28DE217B114FA6PQ/1>
- Zhang, Q. (2008). Rhotacization and the ‘Beijing Smooth Operator’: The social meaning of a linguistic variable. *Journal of Sociolinguistics*, 12(2), 201–222. <https://doi.org/10.1111/j.1467-9841.2008.00362.x>
- Zhang, X. (1955). *Promoting Putonghua with the Beijing Dialect as the Standard Pronunciation*. Secretariat of the National Language Reform Conference.
- Zhao, H. (2017). *Language Variation and Social Identity in Beijing* [Doctoral dissertation, Queen Mary University of London]. [https://qmro.qmul.ac.uk/xmlui/bitstream/handle/123456789/36230/Zhao\\_H\\_PhD\\_final\\_050318.pdf?sequence=1&isAllowed=y](https://qmro.qmul.ac.uk/xmlui/bitstream/handle/123456789/36230/Zhao_H_PhD_final_050318.pdf?sequence=1&isAllowed=y)
- Zhao, P., & Howden-Chapman, P. (2010). Social Inequalities in Mobility: The Impact of the Hukou System on Migrants’ Job Accessibility and Commuting Costs in Beijing. *International Development Planning Review*, 32, 363–384. <https://doi.org/10.3828/idpr.2010.13>

- Zhou, C. (2005). 20 shiji 80 niandai Beijing kouyu erhua ci de shiyong qingkuang [The Usage of Er-hua Words in 1980's Beijing Spoken Language]. *Yuyan jiaoxue yu yanjiu*, 5, 41–48.
- Zhou, C. (2006). *Beijing hua qingsheng, erhua, qingruzi de bianyi yanjiu* [The variance research of un-nuclear tone, erhua and qingruzi in Beijing speech] [Doctoral dissertation]. Beijing Language and Culture University.
- Zhou, M. (2001). The spread of Putonghua and language attitude changes in Shanghai and Guangzhou, China. *Journal of Asian Pacific Communication*, 11(2), 231–253. <https://doi.org/10.1075/japc.11.2.07zho>
- Zhou, M. (2009). Sociolinguistic research in China. In *The Routledge Handbook of Sociolinguistics Around the World*. Routledge.
- Zhu, Y. (2007). China's floating population and their settlement intention in the cities: Beyond the Hukou reform. *Habitat International*, 31(1), 65–76. <https://doi.org/10.1016/j.habitatint.2006.04.002>
- Zhu, Y., & Chen, W. (2010). The settlement intention of China's floating population in the cities: Recent changes and multifaceted individual-level determinants. *Population, Space and Place*, 16(4), 253–267. <https://doi.org/10.1002/psp.544>

**Appendix A**

<i>Category</i>	<i>Surface form in pinyin and IPA (broad transcription)</i>
1 Adding [ɿ] to the vowel	ar[ɑɿ], iar[jɑɿ], uar[waɿ] or[oɿ], uor[uoɿ] er[ʁɿ] ur[uɛɿ] ier[jɛɿ] uer[yɛɿ] aor[auɿ], iaor[jauɿ] our[ouɿ], iur[jouɿ]
2 Adding [əɿ] to the vowel	ir [iəɿ] ür[yəɿ]
3 Changing the rime [-ɿ] and [ɿ] into [əɿ]	-ir[əɿ], -ir[əɿ]
4 Dropping the coda [-i] or [-n] and adding [ɿ] or [əɿ]	air[ɑɿ], uair[uɑɿ], eir[əɿ], ueir[uəɿ] anr[ɑɿ], ianr[jɑɿ], uanr[waɿ], üanr[yaɿ] enr[əɿ], uenr[wəɿ] inr[iəɿ], ünrr[yəɿ]
5 Nasalizing the vowel and adding [ɿ] or [əɿ]	angr[ãɿ], iangr[jãɿ], uangr[ãɿ] engr[ə̃ɿ], ongr[ũɿ] ingr[jə̃ɿ], iongr[ỹɿ]



## Appendix B

### 小组交谈

#### 第一部分（大约 10 分钟）

1. 讨论你记忆中儿时的家乡/北京城，你在家乡/老北京的童年回忆等。
2. 讨论你经历的家乡/北京城的变化。
3. 讨论对北京交通、空气的看法。
4. 讨论你们对北京小吃的看法。

#### 第二部分（大约 20 分钟）

1. 讨论你对北京前门/西直门的认识或你的经历。
2. 讨论你学生生涯当中一次得到满分/超低分的经历。
3. 学生生涯是否上过培训班，曾经有什么感受？
4. 讨论并描述小时候你家周围的都有哪些设施，环境如何？
5. 讨论记忆中小时候的玩具，或者好玩的东西。

English translation:

### Pair talking

#### Part 1. (about 10 minutes)

1. Talk about your hometown/Beijing when you were a kid and your childhood memories in your hometown/old Beijing, etc.
2. Talk about the changes you have experienced in your hometown/Beijing city.
3. Talk about your views on Beijing's traffic and air.
4. Talk about your thoughts on Beijing snacks.

#### Part 2. (about 20 minutes)

1. Talk about what you know about or your experience at Beijing Qianmen, Xizhimen or other men.
2. Talk about one time in your student life when you got full marks/low marks.
3. Have you ever attended tutoring lessons in your student life, and how did you feel?
4. Talk about what facilities were around your home when you were a child and what was the environment like?
5. Talk about your memories of childhood toys, or fun things.



## Appendix C

### 社会语言学访谈-北京人

个人信息 性别；年龄；职业；最高学历

#### 语言背景

1. 你爸妈是北京人吗？爷爷奶奶呢？他们说北京话吗？你出生在北京吗？
2. 你是从小就开始说北京话，还是其它方言？谁教你的呢？

#### 语言能力

1. 你觉得自己说的话跟老北京人的北京话比起来怎么样？
2. 说北京话的时候你会使用几个普通话的词吗？或者说普通话的时候会使用北京话的词或者说话方式吗？

#### 语言使用

1. 你认为你说的是那种话，北京话、普通话还是其它？如果是其它，它是什么话？
2. 你会因为说话对象的不同而有选择地使用北京话和普通话吗？
3. 你会因为说话场合的不同而有选择地使用北京话和普通话吗？
4. 以下场景你更倾向于用北京话还是普通话？  
(1) 问路； (2) 政府机构办事； (3) 学校上课/集体发言

#### 语言态度

北京话/普通话

1. 你认为北京话和普通话一样吗？你觉得相比普通话，北京话有什么特别典型的特征？
2. 你认为说北京话/带有北京口音的话或者普通话有没有给你带来过什么好处或坏处？如果有，好处或坏处是什么？
3. 在你心目中，你认为北京话和普通话哪个 1) 更友好，2) 更亲切，3) 更有用，4) 更有权威，5) 更有威望？

#### 儿化音

1. 你是否注意到外地来北京的人模仿京腔京味儿的现象？如果有，你觉得他们是通过什么方法模仿的？
2. 你是否注意到外地来京的人模仿和使用北京话的儿化？如果有，他们的儿化听起来怎么样？
3. 你有没有注意到外来来京的人对儿化音的模仿和使用？你怎样看待这种现象？
4. 你对外地人学说儿化音持什么态度？



English translation:

### **Sociolinguistic Survey (for Beijing native speakers)**

**Personal information**      Gender; Age; Occupation; Level of education

#### **Language Background**

1. Are your parents originally from Beijing? How about your grandparents? Were you born in Beijing?
2. Have you spoken Beijing Mandarin from childhood? Or other dialect? Who taught you the dialect?

#### **Language Ability**

1. How authentic is your Beijing Mandarin compared to that of old Beijing native speakers?
2. Do you use Standard Chinese words when you speak Beijing Mandarin? Or the other way around?

#### **Language Use**

1. Which Mandarin variety do you think you usually speak: Beijing Mandarin, Standard Chinese, or something else? If it is else, then what is it?
2. Do you selectively use Beijing Mandarin or Standard Chinese depending on to whom you speak?
3. Do you selectively use Beijing Mandarin or Standard Chinese depending on occasions?
4. Which one of the two do you prefer to speak when you are in the occasions below?
  1. asking for road directions; (2) speaking to a government officer in a public counter; (3) speaking in a class/in a group.

#### **Language Attitudes**

*Towards Beijing Mandarin/Standard Chinese*

1. Do you think Beijing Mandarin and Standard Chinese are the same with each other? What do you think are the typical features of Beijing Mandarin, compared to Standard Chinese?
2. Do you think speaking Beijing Mandarin brings any advantages or disadvantages? What are the advantages or disadvantages?
3. Which one is 1) friendlier, 2) more cordial, 3) more useful, 4) more authorities, and 5) more prestigious, respectively?

*Towards the imitation of rhotacization by migrants*

1. Did you notice that some migrants imitate Beijing Mandarin? If yes, in what ways did they imitate Beijing Mandarin?
2. Did you notice that migrants imitate and use rhotacization in Beijing Mandarin? What does the imitated rhotacization sound like?
3. What is your attitude towards the adoption of rhotacization by migrants?

## Appendix D

### 社会语言学访谈-非北京人

个人信息            性别；年龄；职业；最高学历；来京时间

#### 方言背景

1. 你是从小就开始说本地方言吗？谁教你说的呢？
2. 你会说普通话吗？你从什么时候、在哪儿开始学习的？

#### 语言能力

1. 你觉得自己说的方言跟你们本地的老人相比怎么样？你什么时候说方言？你通常和谁说方言？
2. 你说方言的时候你会混入几个普通话的词吗？或者说普通话的时候会使用方言的词吗？

#### 语言使用

1. 你是否注意到随着在北京的生活时间变长，自己逐渐有了京腔京味儿？如果有，你觉得自己是有意学习，还是无意被感染的？如果没有，你平时讲什么话？
2. 如果你的口音中逐渐带上了北京味儿，你何时用北京口音，何时说普通话？
3. 你是否知道北京话中哪些词该儿化，哪些词不该？你说话的时候会注意吗？

#### 语言态度

北京话，普通话及方言

1. 你认为北京话和普通话一样吗？相比普通话，北京话有什么特别典型的特征？
2. 你认为说北京话/带有北京口音的话可不可以给你带来好处或坏处？如果有，好处或坏处是什么？
3. 你认为方言、北京话、普通话哪个 1) 更友好，2) 更亲切，3) 更有用，4) 更有权威，5) 更有威望？

北京话的儿化音

1. 你是否注意到北京话里儿化词的数量比较多？这跟你的方言差别大吗？
2. 北京话的儿化词给你什么感觉？
3. 来到北京后的，你觉得自己是否感觉自己说话儿有北京味儿了？
4. 有人说，在北京生活一段时间后，发现自己说话的时候舌头变翘了，儿化一些之前原本不儿化的词，你呢？
5. 其他外地人所说的儿化音听起来怎么样？
6. 你对外地人学说儿化音持什么态度？

#### 其它

1. 请你想一想你平时身边大致有几位关系较近的北京人？
2. 你在北京生活几年了？你觉得自己是否是北京人？

English translation:

### **Sociolinguistic Survey (for non-native speakers)**

#### **Personal information**

Sex; Age; Occupation; Level of education; When moved to Beijing

#### **Language Background**

1. Have you spoken your local dialect from childhood? Who taught you?
2. Can you speak Standard Chinese? When and where did you start to learn Standard Chinese?

#### **Language Ability**

1. How authentic is your dialect, compared to that of old local people? When do you speak your dialect? Usually with whom?
2. Do you use Standard Chinese words when you speak your dialect? Or the other way around?

#### **Language Use**

1. Did you notice yourself adopting some features in Beijing Mandarin after you came to Beijing? If yes, do you think you learn it consciously or unconsciously? If no, what Mandarin variety do you speak?
2. If you think you already carry some features in Beijing Mandarin, when do you use Beijing Mandarin? When do you use Standard Chinese?
3. Do you know which words should be rhotacized and which could not be? Did you pay attention when you spoke?

#### **Language Attitudes**

*Towards Beijing Mandarin, Standard Chinese and/or your dialect*

1. Do you think Beijing Mandarin and Standard Chinese are the same with each other? What do you think are the typical features of Beijing Mandarin, compared to Standard Chinese?
2. Do you think speaking (some) Beijing Mandarin could bring any advantages or disadvantages to migrants? If yes, what are the advantages or disadvantages?
3. Which one is 1) friendlier, 2) more cordial, 3) more useful, 4) more authoritative, and 5) more prestigious, respectively??

*Towards rhotacization in Beijing Mandarin*

1. Do you notice there are many rhotacized words in Beijing Mandarin? Is that a big difference with your dialect?
2. What impression does rhotacization bring to you?
3. Did you adopt some Beijing Mandarin after you come to Beijing?
4. Some people say that after a period of time in Beijing, they rhotacize more words than before, and you?
5. How does the rhotacization by other migrants sound?
6. What is your attitude towards the imitation of rhotacization by migrants?

#### **Other**

1. How many local Beijingers having frequent contact with you in your daily life?
2. How many years have you lived in Beijing? Do you think you are a Beijinger?

## Appendix E

### Extract 1: Respondent M33, Beijing native, male, young.

M33: 我以前说北京话,但是我以前没意识,刚上大学那会儿,别人说我的北京话味儿浓;从那以后我就跟同学们说普通话,北京味儿就淡了。

### Extract 2: Respondent M29, Beijing native, male, young.

M29: 当我需要这种认同的时候,我就用过来;跟北京人说话的时候,我就会故意强调我的北京味儿.....比如,儿化音,语音语调什么的。就不会收敛,比如打出租,我觉得司机可能对本地人会客气点儿,不会宰我。我就显出比他北京味更重,他骗不了我。所以,我想让他们知道我是北京的,我就显出来,但需要隐藏的时候,我就藏起来,

### Extract 3: Respondent M37, Beijing native, male, young.

M15: .....外地人儿化音加的地方牵强。有的词加儿跟不加儿有严格的区分。儿化音是一个非常不刻意东西,但是他们说的特别刻意,尤其是南方人。.....没必要学说北京话,有的外地人觉得来了北京,学说北京话、取得北京的身份,对他很重要。其实我觉得这个没必要。

### Extract 4: Respondent F7, Beijing native, female, middle.

F7: 有的外地人,觉得在北京呆几年就是北京人了.....我们一听就能听出来北京人说的儿化音和外地人说的儿化音。他们学得不像,尤其是南方人,挺逗的.....但是我很高兴很欢迎他们想学,北京是我家,你上我们家里做客,又学我们家说话,很有自豪感。

### Extract 5: Respondent F31, Beijing native, female, young.

F31: 我不觉得有什么好处,北京话的特征跟北京人的特征挺像的,不是那种积极向上的,就是得过且过,就是怎么舒服怎么来。

### Extract 6: Respondent F1, Beijing native, female, old.

F1: ... 我们确实佩服外地人,你们外地人比北京孩子更努力,北京孩子惰性高;但有的人仇恨外地人,排斥外地人,因为.....外地人给北京人造成压力很大。

### Extract 7: Respondent M15, Beijing native, male, middle.

M15: 没好处也没坏处吧。有一段时间,我不太愿意承认我是北京人,因为我们周围生活的大部分是外地人。都不是北京人。.....我怕我们融入不进去。.....不被歧视就不错了。我现在不认为说北京话有什么好处了。我 20 多岁的时候是那个想法,但现在 30 多岁了,就只能有这个想法。

### Extract 8: Respondent M16, Beijing native, male, old.

M16: 说北京话有什么好处?!北京人最没本事了,这个城市有能耐的都是外地人。

### Extract 9: Respondent F33, Beijing native, female, middle.

F33: 我身边有外地人。我老公本来是外地人.....我跟我老公老家跟他朋友聚会的时候,他们一听就能听出,他们就问,你媳妇儿是不是北京人呀?哎呀,别人就觉得,你媳妇儿是北京人。是首都的,不是外地的。我就能体会到大家觉得你是北京人,真牛。我确实心里有这种优越感.....我也觉得自己是北京人,挺好的。

### Extract 10: Respondent F15, Beijing native, female, middle.

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F15: 我在安徽当兵的时候, 全国各地的都有, 别人是外地的, 他们说话有口音, 我说话没有口音。“你真行, 哎呀, 你是北京的, 你多好呀”。其实外地人特别羡慕咱们的, 这让我觉得很好。

**Extract 11: Respondent F16, Beijing native, female, middle.**

F6: 我们在地旅游的时候, 不管是哪里来的人我们说话他们都能听懂, 只要他们会说点儿普通话。

**Extract 12: Respondent F6, rhotic speaker, female, young.**

F6: .....儿化音..... 我觉得北京话里好像没有什么是不能儿化的。

**Extract 13: Respondent F24, rhotic speaker, female, young.**

F24: 我们去西直门儿吧, 觉得顺口, 刚开始觉得烦, 但多了之后就觉得加上儿才觉得舒服, 自然, 顺口。我觉得顺口的时候都加儿化。

**Extract 14: Respondent M53, Non-rhotic speaker, male, middle.**

M53: 刚上班的时候想模仿, 于是练习了很久, 但是发现还是达不到那个水平, 所以就放弃了。

**Extract 15: Respondent F26, Non-rhotic speaker, female, young.**

F26: 如果你想加一些儿化音, 也可以, 这很正常, 但是不能太多啊, 如果一个人加太多了, 就觉得你好装啊, 就好像违背了你的本性一样。

**Extract 16: Respondent M5, rhotic speaker, male, young.**

F24: 我觉得受到北京话的影响很正常, 并为之感到骄傲.....

**Extract 17: Respondent F6, rhotic speaker, female, young.**

F6: .....有的人想要抛去自己外地人的身份, 我觉得没有用必要。但如果是自然而然的受到影响, 那也行。就像很多人都容易被东北话带跑一样。

**Extract 18: Respondent M3, rhotic speaker, male, young.**

M3: 没好处也没什么坏处, 北京话不就是一门方言吗, 有什么了不起的。

**Extract 19: Respondent M55, rhotic speaker, male, middle.**

M55: 有点天然的皇城根的骄傲的感觉, 北京话感觉不是特别舒服。没好处也没坏处吧... 北京人他们会特意把自己的北京口音带出来, 就是为了彰显自己北京人的这个身份。我们都觉得他们有显摆的色彩在, 但其实北京人牛掰的有几个呀?! .....可能他们觉得自己很优越, 虽然他们有些人是很好, 我还是有抵触心理。

**Extract 20: Respondent F49, rhotic speaker, female, middle.**

F49: 没有。真正的北京人不会故意显露自己的北京味儿。我原来的那个老板也是北京人, 他说话就没有那种音, 他不刻意显示自己的北京人优势。你听到的那些北京人, 要不就是痞了吧唧的那种人, 要不就是很老的人, 就经常显示自己是地道的北京人, 特别烦人。

**Extract 21: Respondent F8, rhotic speaker, female, old.**

F8: 没有, 我觉得一个人说北京话, 层次比较低, 普通话的人就觉得受过教育。

**Extract 22: Respondent M4, rhotic speaker, male, young.**

**M4:** ...说北京话我就能获得北京认同感，也能有助于我融入，缩短跟北京人的距离。

**Extract 23: Respondent F24, rhotic speaker, female, young.**

**F24:** ...它可以缩短跟别人的距离，消除成见。如果你多说一些儿化，本地人就觉得你很亲切，他的态度就会不一样。

**Extract 24: Respondent F38, rhotic speaker, female, young.**

**F38:** 北京人更容易接受本地人，说北京话就会好一点。如果我会说北京话，出租车司机就不会宰我。而且我像他们那样说话的时候觉得自己比较自信。



**Appendix F****Table F. 1** The average number of rhotacized rimes by speakers from three dialect backgrounds.

<i>Num</i>	<i>Rimes</i>	<i>Beijing</i>	<i>Rhotic</i>	<i>Non-rhotic</i>
1	ianr	48	22	4
2	ar	26	7	2
3	uanr	17	6	4
4	our	16	5	1
5	üanr	13	2	2
6	enr	12	17	3
7	anr	11	11	2
8	er	10	6	1
9	ueir	10	5	2
10	uair	9	4	1
11	aor	8	3	0
12	air	6	2	1
13	--ir	6	2	1
14	ingr	5	3	0
15	uor	5	1	0
16	iour	5	1	0
17	ir	4	3	0
18	ur	4	1	0
19	iaor	4	3	0
20	uenr	4	2	1
21	ongr	4	1	0
22	iangr	3	2	0
23	angr	3	2	0
24	engr	3	1	0
25	iar	2	1	0
26	uar	2	1	0
27	or	2	0	0
28	inr	2	0	0
29	ier	1	0	0
30	-ir	1	1	0
31	eir	1	1	0
32	uangr	1	1	0
33	ür	0	0	0
34	uengr	0	0	0
35	üer	0	0	0
36	ünr	0	0	0
37	üngr	0	0	0





## Appendix G

**Table G. 1** The total and average number of rhotacized rimes by three age groups of Beijing native speakers.

	<i>Young</i>			<i>Middle-aged</i>			<i>Old</i>		
	<i>Rime</i>	<i>Total</i>	<i>Avg.</i>	<i>Rime</i>	<i>Total</i>	<i>Avg.</i>	<i>Rime</i>	<i>Total</i>	<i>Avg.</i>
1	ianr	221	15	ianr	126	16	ianr	139	17
2	enr	97	6	ar	78	10	ar	97	12
3	ar	65	4	our	68	9	uanr	74	9
4	ueir	50	3	üanr	41	5	üanr	44	6
5	anr	48	3	uanr	37	5	er	41	5
6	er	43	3	ueir	33	4	our	41	5
7	üanr	43	3	anr	32	4	uair	36	5
8	uanr	41	3	aor	23	3	aor	31	4
9	our	39	3	enr	18	2	anr	31	4
10	uair	37	2	er	16	2	iour	30	4
11	air	23	2	air	16	2	enr	29	4
12	iangr	23	2	engr	16	2	ingr	25	3
13	--ir	22	1	uair	15	2	uor	22	3
14	ir	19	1	ir	13	2	--ir	20	3
15	aor	17	1	--ir	13	2	ur	19	2
16	iaor	14	1	uor	13	2	ueir	19	2
17	uenr	14	1	ingr	11	1	air	17	2
18	uor	11	1	iangr	10	1	ongr	17	2
19	ingr	10	1	iaor	9	1	uenr	15	2
20	ongr	10	1	ur	8	1	iaor	14	2
21	iar	10	1	angr	8	1	angr	12	2
22	iour	9	1	iar	8	1	ir	9	1
23	ur	8	1	uar	7	1	uar	8	1
24	inr	8	1	or	6	1	or	7	1
25	uar	7	0	eir	6	1	iar	6	1
26	engr	6	0	uenr	6	1	inr	6	1
27	or	5	0	ongr	6	1	iangr	5	1
28	angr	5	0	ier	5	1	uangr	4	1
29	ier	5	0	-ir	4	1	-ir	3	0
30	-ir	4	0	iour	3	0	engr	3	0
31	eir	1	0	inr	2	0	eir	2	0
32	uangr	1	0	uangr	1	0	ier	2	0
33	ür	0	0	ür	0	0	ür	1	0
34	ünr	0	0	ünr	0	0	ünr	0	0
35	uengr	0	0	uengr	0	0	uengr	0	0
36	üngr	0	0	üngr	0	0	üngr	0	0
37	üer	0	0	üer	0	0	üer	0	0

**Table G. 2** The total and average number of rhotacized rimes by three age groups of Rhotic speakers.

	<i>Young</i>			<i>Middle-aged</i>			<i>Old</i>		
	<i>Rime</i>	<i>Total</i>	<i>Avg.</i>	<i>Rime</i>	<i>Total</i>	<i>Avg.</i>	<i>Rime</i>	<i>Total</i>	<i>Avg.</i>
1	enr	101	13	ianr	47	6	ianr	36	6
2	ianr	77	10	er	28	4	uanr	17	3
3	anr	47	6	anr	23	3	ueir	16	3
4	ar	34	4	ar	22	3	anr	14	2
5	uenr	14	2	our	21	3	er	12	2
6	uair	13	2	enr	21	3	our	10	2
7	aor	13	2	uanr	16	2	enr	10	2
8	uanr	10	1	ueir	13	2	iangr	8	1
9	ingr	10	1	ir	12	2	ingr	8	1
10	iaor	9	1	uair	10	1	iaor	7	1
11	ir	7	1	aor	7	1	--ir	6	1
12	air	6	1	iaor	7	1	angr	6	1
13	our	6	1	uor	7	1	uair	5	1
14	iar	6	1	uangr	6	1	üanr	5	1
15	angr	5	1	engr	4	1	air	3	1
16	ur	4	1	ur	3	0	aor	3	1
17	-ir	4	1	-ir	3	0	ongr	3	1
18	eir	4	1	uenr	3	0	ir	2	0
19	ueir	4	1	angr	3	0	uangr	2	0
20	üanr	4	1	ingr	3	0	engr	2	0
21	er	3	0	iar	3	0	uor	2	0
22	--ir	3	0	air	2	0	ar	1	0
23	iour	3	0	üanr	2	0	ur	1	0
24	uar	2	0	uar	2	0	-ir	1	0
25	ier	2	0	--ir	1	0	iour	1	0
26	or	1	0	iour	1	0	uar	1	0
27	iangr	1	0	iangr	1	0	or	0	0
28	engr	1	0	or	0	0	ür	0	0
29	ür	0	0	ür	0	0	eir	0	0
30	ünr	0	0	eir	0	0	uenr	0	0
31	uangr	0	0	ünr	0	0	ünr	0	0
32	uengr	0	0	uengr	0	0	uengr	0	0
33	ongr	0	0	ongr	0	0	üngr	0	0
34	üngr	0	0	üngr	0	0	iar	0	0
35	uor	0	0	ier	0	0	ier	0	0
36	üer	0	0	üer	0	0	üer	0	0
37	inr	0	0	inr	0	0	inr	0	0

**Table G. 3** The total and average number of rhotacized rimes by three age groups of Non-rhotic speakers.

	<i>Young</i>			<i>Middle-aged</i>			<i>Old</i>		
	<i>Rime</i>	<i>Total</i>	<i>Avg.</i>	<i>Rime</i>	<i>Total</i>	<i>Avg.</i>	<i>Rime</i>	<i>Total</i>	<i>Avg.</i>
1	uanr	22	3	ianr	14	2	ianr	4	1
2	enr	17	2	ueir	10	1	uanr	3	0
3	anr	12	2	ar	7	1	üanr	3	0
4	ar	10	1	uanr	6	1	--ir	2	0
5	ianr	9	1	--ir	4	1	anr	2	0
6	üanr	9	1	air	4	1	enr	2	0
7	uenr	6	1	üanr	4	1	our	1	0
8	er	4	1	enr	4	1	ar	0	0
9	uair	4	1	uair	3	0	or	0	0
10	ueir	3	0	anr	3	0	er	0	0
11	--ir	2	0	uenr	3	0	ir	0	0
12	our	2	0	aor	2	0	ur	0	0
13	iangr	2	0	ingr	2	0	ür	0	0
14	uar	2	0	-ir	1	0	-ir	0	0
15	ir	1	0	our	1	0	air	0	0
16	-ir	1	0	iangr	1	0	uair	0	0
17	air	1	0	iar	1	0	eir	0	0
18	uangr	1	0	uar	1	0	ueir	0	0
19	uor	1	0	or	0	0	aor	0	0
20	or	0	0	er	0	0	iaor	0	0
21	ur	0	0	ir	0	0	iour	0	0
22	ür	0	0	ur	0	0	uenr	0	0
23	eir	0	0	ür	0	0	ünr	0	0
24	aor	0	0	eir	0	0	angr	0	0
25	iaor	0	0	iaor	0	0	iangr	0	0
26	iour	0	0	iour	0	0	uangr	0	0
27	ünr	0	0	ünr	0	0	engr	0	0
28	angr	0	0	angr	0	0	ingr	0	0
29	engr	0	0	uangr	0	0	uengr	0	0
30	ingr	0	0	engr	0	0	ongr	0	0
31	uengr	0	0	uengr	0	0	üngr	0	0
32	ongr	0	0	ongr	0	0	iar	0	0
33	üngr	0	0	üngr	0	0	uar	0	0
34	iar	0	0	uor	0	0	uor	0	0
35	ier	0	0	ier	0	0	ier	0	0
36	üer	0	0	üer	0	0	üer	0	0
37	inr	0	0	inr	0	0	inr	0	0



## Appendix H

**Table H. 1** The number of OT *ianr* obtained in the corpus ( $N=613$ ), the actual number of *ianr* in the formant analysis ( $N=302$ ) and the actual average number of *ianr* per speaker per social group.

Gender	Age	Beijing			With-r			Non-r		
		<i>ianr</i>	<i>actl. ianr</i>	<i>actl. avg.</i>	<i>ianr</i>	<i>actl. ianr</i>	<i>actl. avg.</i>	<i>ianr</i>	<i>actl. ianr</i>	<i>actl. avg.</i>
Male	Young	79	45	6	30	21	5	4	3	1
	Middle	15	8	2	29	17	4	2	2	1
	Old	31	11	3	31	11	3	2	1	1
Female	Young	63	35	5	27	17	4	0	0	0
	Middle	46	22	6	19	9	2	7	4	1
	Old	59	19	5	28	12	6	0	0	0
Total		293	140	5	164	87	4	15	10	0

**Table H. 2** The number of NT *ianr* obtained in the corpus ( $N=260$ ), the actual number of *ianr* in the formant analysis ( $N=114$ ) and the actual average number of *ianr* per speaker per social group.

Gender	Age	Beijing			With-r			Non-r		
		<i>ianr</i>	<i>actl. ianr</i>	<i>actl. avg.</i>	<i>ianr</i>	<i>actl. ianr</i>	<i>actl. avg.</i>	<i>ianr</i>	<i>actl. ianr</i>	<i>actl. avg.</i>
Male	Young	63	34	4	9	6	2	2	1	0
	Middle	38	18	5	20	10	3	1	1	0
	Old	12	4	1	12	5	1	0	0	0
Female	Young	49	29	4	7	7	2	3	3	1
	Middle	25	13	3	23	14	4	0	0	0
	Old	49	22	6	4	1	1	0	0	0
Total		236	120	4	75	43	2	6	5	0

**Table H. 3** The number of NG *ianr* obtained in the corpus ( $N=22$ ), the actual number of *ianr* in the formant analysis ( $N=16$ ) and the actual average number of *ianr* per speaker per social group.

Gender	Age	Beijing			With-r			Non-r		
		<i>ianr</i>	<i>actl. ianr</i>	<i>actl. avg.</i>	<i>ianr</i>	<i>actl. ianr</i>	<i>actl. avg.</i>	<i>ianr</i>	<i>actl. ianr</i>	<i>actl. avg.</i>
Male	Young	19	12	2	6	5	1	0	0	0
	Middle	12	7	2	4	4	1	0	0	0
	Old	22	9	2	7	2	1	1	1	1
Female	Young	14	9	1	2	2	1	0	0	0
	Middle	3	1	0	2	1	0	0	0	0
	Old	14	4	1	0	0	0	0	0	0
Total		84	42	1	21	14	1	1	1	0

*Note:* *ianr* refers to the number of rimes *ianr* obtained by all the speakers of each social group; *actl. ianr* refers to the actual number of rimes *ianr* being able to be used in acoustics analysis of each social group; *actl. avg.* refers to the actual average number of rimes *ianr* per speaker per social group in the acoustics analysis.

