

Towards a meta-analysis of phonetic convergence effects in non-interactive speech production tasks

Leonardo Lancia¹ and Noël Nguyen^{2,3}

1: Laboratoire de Phonétique et Phonologie, CNRS & Université de Paris 3, France

2: Aix Marseille Univ, CNRS, LPL, Aix-en-Provence, France

3: Institute for Language, Communication and the Brain, Aix Marseille Univ, France

Since Goldinger's (1998) and Pardo's (2006) seminal studies, there has been strong interest in phonetic convergence between speakers in the production of speech. Considerable effort has been put into exploring the cerebral, sensorimotor and cognitive bases of phonetic convergence in both adults and children. However, it is yet far from clear along which dimensions in the speech signal speakers may converge towards each other. Pardo et al. (2013) pointed out that the available acoustic studies "present a bewildering array of patterns of convergence and divergence, with a great deal of variability and inconsistencies across measures." The degree of phonetic convergence across speakers has also been often assessed by means of perceptual judgments performed by listeners (e.g., Babel & Bulatov, 2012). However, it has proven highly difficult to identify the phonetic parameters on which these judgments may have relied. The objective of the present work is to perform a meta-analysis of a large sample of studies on phonetic convergence between speakers, using recently developed methods and tools (Borenstein et al., 2009; Lipsey & Wilson, 2001; Tsuji et al., 2014). We have focused on studies published in peer-reviewed journals over the last two decades, and in which convergence was perceptually and/or acoustically assessed in non-interactive situations (i.e., participants exposed to one or several model speakers' recorded speech). A Matlab graphical user interface was developed that has allowed us to aggregate the results of the selected studies in a systematic and homogeneous manner. Specific attention was paid to potential correlations between observations, as well as to the issue of unreported data in the case of non-significant comparisons. The data are being analyzed and preliminary results will be presented at the workshop.

Acknowledgments: this work is supported by the Institute for Language, Communication and the Brain at Aix-Marseille University.

References

- Babel, M., & Bulatov, D. (2012). The role of fundamental frequency in phonetic accommodation. *Language and speech*, 55(2), 231-248.
- Borenstein, M., Hedges, L. V., Higgins, J. P., & Rothstein, H. R. (2011). *Introduction to meta-analysis*. John Wiley & Sons.
- Goldinger, S. D. (1998). Echoes of echoes? An episodic theory of lexical access. *Psychological review*, 105(2), 251.
- Lipsey, M. W., & Wilson, D. B. (2001). *Practical meta-analysis*. Sage Publications, Inc.
- Pardo, J. S. (2006). On phonetic convergence during conversational interaction. *The Journal of the Acoustical Society of America*, 119(4), 2382-2393.
- 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.
- Tsuji, S., Bergmann, C., & Cristia, A. (2014). Community-augmented meta-analyses: Toward cumulative data assessment. *Perspectives on Psychological Science*, 9(6), 661-665.