

HVPT: a Technique from Research to Practice

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Abstract: This review of High Variability Phonetic Training (HVPT) research begins with locating HVPT in its historical context and as a methodology for the phonetic learning of second language (L2) including perception and production of L2 sounds which is an essential part of second language acquisition (SLA). The obstacles and possible solutions of HVPT are discussed, and recommendations for the future regarding the applicability of HVPT to L2 learning and teaching are provided.

Keywords: High Variability Phonetic Training (HVPT); Pedagogical tool; Online training

1. Introduction

Learning the pronunciation of a new language means that learners can both recognize and produce new speech sounds, the processes of which are called speech perception and production respectively. It is documented vastly that second language (L2) learners especially late learners experience difficulties when learning new L2 speech sounds, and there has been a great deal of interest in developing interventions to address this challenge. In the classroom, part of the problem comes from speech produced by the teacher or recordings to demonstrate pronunciation features. Whereas in research, a technique called high variability phonetic training (HVPT) has shown great promise in increasing learners' ability to perceive non-native sounds. HVPT introduces variability into the perception practice by using multiple voices produced by different talkers rather than one voice.

Levis (2016) regards HVPT as an "area of research that has great potential to change the way materials are constructed", arguing that it "has great promise in pronunciation training, even on features that seem particularly resistant to instruction". Further research is needed for better understanding of the suitability of HVPT in language pedagogy, since teaching and research often fail to inform each other. And it is believed that language teachers and learners may benefit a lot from HVPT.

2. Origin of HVPT

HVPT can also refer to high variability identification procedure (Lively et al. , 1994), high variability perceptual training (Bradlow et al. , 1997) and high-variability auditory training (Iverson, Pinet & Evans, 2012), but the term high variability phonetic training or HVPT enjoys the greatest acceptance. It seems that HVPT appears as a technique in a study by Iverson, Hazan and Bannister (2005) at the earliest, which aimed at answering theoretical questions about the nature of L2 speech learning applied in a number of laboratory papers (Logan et al, 1991; Lively et al. , 1993; Lively et al. , 1994; Bradlow et al. , 1997; Bradlow et al. , 1999).

Phonetic variability means the ways that speech sounds differ depending on a variety of factors ranging from the subject who is producing them to what phonetic contexts they are in. The role that phonetic variability plays in speech processing and learning has been paid much attention to by researchers. Liberman, Harris, Hoffman, and Griffith (1957) found that speech sounds are perceived as belonging to mental categories. Researchers tried to demonstrate how knowledge of L2 segmental categories evolves, to determine whether adult perceptual systems remain malleable, and under what conditions optimal learning occurs.

The high variability training procedure developed by Logan et al. (1991) is recognized as an effective method for training speech perception in the laboratory. Thus, HVPT established itself as a major field of inquiry in the speech sciences.

3. Gaps and possible solutions

Although many studies indisputably demonstrate the effectiveness of HVPT, it is undeniable that HVPT needs further

research before it gains broader acceptance and becomes a practical pedagogical tool. In this section, some methodological shortcomings of existing HVPT studies are concluded, remaining gaps and possible solutions are highlighted and some recommendations are given.

3.1 Individual differences

Individual differences may be a thorny problem for researchers to consider and explain. When it comes to L2 learning, L2 aptitude may be a factor that leads to different results. However, there is no unified standard that can divide learners into experienced or inexperienced. Age was regarded as a crucial factor concerning Lenneberg's (1967) Critical Period Hypothesis (e. g., Flege, 1987). Empirical evidence suggested that the relationship between age and strength of foreign accent was linear, rather than defined by an abrupt age boundary after which learning to speak without a foreign accent was impossible (e. g. , Flege, Munro & MacKay, 1995). To be specific, according to the revised Speech Learning Model (SLM-r)(Flege & Bohn, 2021), Full Time Equivalent (FTE) may be a better criteria for L2 learners to measure L2 experience. Years of FTE input is calculated by multiplying Length of Residents (LOR) by the proportion of L2 use (derived from questionnaire estimates of percentage L2 use). Still, we need to consider the quantity and quality of L2 phonetic input before conducting related research. And other personal aspects may have impact on research such as language background (first language and if any other languages), attitude and so on, though it is still unknown how they function.

3.2 Adaptive training

In previous studies, most participants are late L2 learners, who are divided into trained groups and control groups generally. Forced choice identification task (FCID) is mostly used and recognized, and the training session is relatively fixed with lack of flexibility. The number of talkers has become an important variable. At the segmental level, the target falls in vowels or consonants. While at the suprasegmental level, there are only a few experimental studies on Mandarin tones, with the tokens of words or International Phonetic Alphabet (IPA). As a result, future studies can adjust the recruitment of participants or the setting of the groups. Success of multiple tasks has been shown by several studies during testing and training, hence research can try to do tasks that are not limited to the classic FCID paradigm. As for the training session, it can be divided into several stages based on the abilities and habits of different learners, so as to be more targeted and flexible. In addition, high variability is not equal to multi-talkers, so the diversity of materials still needs to be further explored and tried. In addition to training Japanese speakers learning English /r/-/l/ (Logan et al. , 1991; Lively et al. , 1994; Bradlow, 2008), or English vowels or consonants as L2 of other natives (Melnik & Peperkamp, 2020), and the Mandarin tone (Wang et al. , 1999), more targets and contents can be involved, such as other suprasegmental features like stress or intonation and other languages. Tokens can also be presented in a variety of forms, such as pictures, spectrograms, videos, etc. Future research should determine how an adaptive learning approach can best be applied in the context of HVPT.

For adult learners, it is possible and convenient to carry out the pronunciation learning on mobile terminals. However, not many programmes or apps have been developed specifically for language learning, let alone pronunciation because of the technological complexity and development costs (Rogerson-Revell, 2021). But there still exist extensive opportunities for adaptive and meaning pronunciation learning through a variety of digital technologies.

4. Conclusion

It is well documented that HVPT has effectiveness for improving learners' perception and pronunciation of L2 sounds, yet many obstacles remain for more extensive use of HVPT in language teaching. Laboratory studies and the application of HVPT to L2 learning and teaching settings have great potential to help learners L2 acquisition. More research is needed to bridge the gap between research and practice, which requires further communication and cooperation among researchers, teachers, and also programmers. It is expected that the problems now will be dealt with soon with the development and progress of theory and technology.

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