

Critical Review:

In adult second language speakers of English seeking accent modification, can intervention based on suprasegmental features (i.e. prosody) be more effective than segmental features (consonants, vowels) in modifying foreign accents/improving positive speech characteristics?

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This critical review examines whether intervention based on suprasegmental features (i.e. teaching prosody) is more effective than segmental features (consonants, vowels), in modifying foreign accents or improving positive speech characteristics. The studies reviewed offer suggestive evidence in support of better outcomes using the suprasegmental approach, despite the wide use of the segmental approach provided in training/education for both instructors and clients. Recommendation for clinical practice and future research are discussed.

Introduction

The influence of a first language can result in a perceptible speech difference or foreign accent when learning a second language. The request for accent modification in multi-lingual or bilingual speakers reflects the struggle these speakers have in a monolingual, primarily English, society. In fact, requests for accent modification services have increased as companies continue to employ more foreign-born workers (Barb, 2005). Many of these workers are highly educated, were taught English in their native countries, and consider their accent a barrier, not just to conversations, but also to climbing the corporate ladder (Barb, 2005). Accent modification is primarily provided by Speech-Language Pathologists (SLPs), English as a Second Language (ESL) teachers, and voice coaches in the theatre profession.

Currently in the field of accent modification, there is no regulation to be qualified as a specialist, no generally accepted instruction protocol, insufficient training in the area, and a lack of scholarly research on the most effective method (Schmidt & Sullivan, 2003). The traditional method of accent modification (one that is often taught to instructors and provided in materials and programs) is to train the production of segmental features including consonants and vowels (Breitkreutz, Derwing, & Rossiter, 2009; Jenkins, 2004). An opposing method of accent modification is to train suprasegmental features such as prosody to improve intelligibility. Prosody includes variations in intonation, timing or rhythm, and stress. Various studies have suggested the importance of prosody in intelligibility (whether or not a particular form interferes with actual understanding), and comprehensibility (the subjective or perceived degree

of difficulty involved in understanding a given form) (Anderson-Hsieh, Johnson, & Koehler, 2006; Derwing & Rossiter, 2003; Munro & Derwing, 1995; Tajima, Port, & Dalby, 1997). One study failed to find a significant relationship between intelligibility and nativeness of prosody (Derwing & Munro, 1997).

However, only a small number of studies have compared the effectiveness of particular instructional approaches on positive speech characteristics, such as intelligibility, comprehensibility, accentedness and fluency (rate of speech and hesitations). Yet these studies tend to suggest optimal results when using suprasegmental instruction (Barb, 2005; Brown, 1995; Derwing & Rossiter, 2003; Derwing, Munro, & Wiebe, 1998; Fraser, 1999). Without a perceptible understanding of the most effective instructional method, clinicians and instructors are left to follow their own judgments, which may not be in the best interest of their clients. This critical review and future research have the potential to greatly impact the way instructors are trained in and teach accent modification with their clients.

Objectives

The primary objective of this review was to critically examine the current literature to determine whether suprasegmental training results in optimal results in accent modification in comparison to the segmental method. The secondary objective was to provide evidence based recommendations for clinical practice and future research.

Methods Search Strategy

The research articles for this critical review were obtained through a computer database search. The databases included: PubMed, Google Scholar, and Scholars Portal. The following search terms were used (accent modification) OR (accent adjustment) OR (accent reduction) OR (pronunciation training) AND (segmental) AND (suprasegmental).

Selection Criteria

The studies that were included compared segmental or related instruction with suprasegmental instruction for 'second' language or nonnative learners of English. Studies that involved children or adolescents age 17 years and younger were not included, although none of these studies were found. There were no limitations placed on the languages involved in addition to English, the level of English language proficiency, or whether second language English learners were 'bilingual' or 'multilingual'.

Data Collection

The search results yielded five articles that were selected for the critical review process. Studies were either experimental, quasi-experimental, or reports based on expert opinion.

Results

Derwing and Rossiter (2003) conducted a level 2a experimental pseudorandomized clinical trial study with three groups of participants. The purpose was to identify which instructional method (out of three) resulted in the greatest improvements in positive speech characteristics, after a 12 week semester in accent modification.

All 48 participants were nonnative learners of English enrolled in an ESL class. Participants had an intermediate level of English proficiency and were assigned (quasirandomly) to one of three groups, which were matched as closely as possible according to English language proficiency, native language, gender, length of time in Canada, and age upon arrival. The groups included 'Segmental' instruction (focused on consonants and vowels), 'Global' instruction (primarily prosodic features), or 'No Specific Pronunciation' instruction.

All participants described events depicted on an eight framed cartoon story, as pre- and post-therapy recorded speech samples. A 45 second duration was selected from the beginning of each extemporaneous narrative, and 6 expert listeners rated the samples on three different 9-point Likert scales: 'comprehensibility' (1 = very easy to understand, and

9 = impossible to understand), 'accentedness' (1 = no accent, and 9 = very strong accent), and 'fluency' (1 = very fluent, and 9 = extremely dysfluent).

Derwing and Rossiter (2003) appropriately calculated inter-rater reliability Pearson coefficients (r), yielding acceptable levels of reliability. A significant improvement was detected (using unspecified statistics) between pre- and post-test scores of comprehensibility and fluency in the students that received Global instruction (prosodic), whereas no change was observed in the other instruction groups.

Since all participants had similar levels of English proficiency, and groups were matched according relevant characteristics, systematic bias was potentially limited. In addition, an experimental level study (although pseudorandomized) comparing different instructional methods is uncommon in the literature, which potentially adds to the significance of the findings. Yet limitations to this study are present. The authors did not describe what statistical procedures were used to determine significance, and did not report on any blinding procedures of the raters.

Given the strengths and limitations, this study offers suggestive evidence in support of using suprasegmental instruction to improve positive speech characteristics.

Derwing, Munro, and Wiebe (1998) conducted a level 2a experimental pseudorandomized clinical trial study with three groups of participants. The purpose was to identify which instructional method (out of three) resulted in the greatest improvements in positive speech characteristics after a 12 week semester in accent modification, similar to Derwing and Rossiter (2003).

Forty-eight participants were assigned to one of 3 groups of 16, roughly balanced for native language, gender, age on arrival, and length of time in Canada. Groups included 'segmental' instruction, 'global' instruction, and 'no specific pronunciation (NSP)' instruction. Learners had recorded speech samples of sentences and extemporaneous narratives as pre- and post-therapy evaluation.

Raters included 48 native speakers of English, recruited from education classes at the university, and 6 experienced ESL teachers. In a blind rating task, the 48 listeners judged randomized sentences for accentedness and comprehensibility. The experienced ESL teachers rated the narratives for accent, comprehensibility, and fluency. All ratings were 9-

point Likert scales similar to Derwing and Rossiter (2003).

A total of 12 rater's scores were appropriately excluded from analysis due to failure to use the full scales as instructed (to reduce the potential of floor effects). Appropriate inter-rater reliability scores were calculated (for non-expert and expert) indicating moderate levels of agreement. An appropriate two-way mixed ANOVA with Time (1 or 2) and teaching method was conducted separately for both comprehensibility scores and the accentedness scores from the 36 raters. Results indicated significant improvement for both the segmental group and suprasegmental group, where as no change occurred in the NSP group. Finally, an appropriate 2-way ANOVA with the 6 expert's ratings on narratives indicated significant improvement in comprehensibility and fluency only for the group receiving global (suprasegmental).

Although non-expert raters may be a strength for judging speech comprehensibility, the exclusion of 12 raters due to failure to score properly raises the possibility that raters were not trained adequately. A strength of the study was the use of blind raters, and matching of the groups to reduce potential systematic biases, similar to Barb (2005) and Derwing and Rossiter (2003).

This study offers suggestive evidence that supports using segmental or suprasegmental approaches in accent modification therapy.

Barb (2005) conducted a level 2b quasi-experimental, non-randomized clinical trial study. The purpose was to determine the effectiveness of an accent modification instructional method based on suprasegmental features (i.e. intonation).

All participants were nonnative learners of English enrolled in an accent modification course over a 16 week semester. Fifteen participants in the experimental group received the 'modified method' of instruction (intended to reduce metalinguistic demands), and 15 participants in the control group were selected from an existing database of audiotaped recordings, of individuals who had previously completed the 'standard' suprasegmental method of instruction. The tapes were selected from the archives to match the experimental group on the following characteristics: language, native country, gender, and English proficiency level. However, the author failed to explain specific procedures for matching according to proficiency level, and any

effects of English proficiency level on the results of the study.

Three expert listeners trained in speech-language pathology and experienced in teaching ESL evaluated speech samples (37 words in a paragraph reading) for overall perception of comprehensibility on a 5-point Likert scale with a corresponding rating rubric (1 = no control, and 5 = complete control).

Appropriate statistics (*t* test; ANCOVA) revealed significantly better overall performance and comprehensibility for the group receiving suprasegmental instruction, even when differences in language demographics were taken into account.

There are a number of strengths in this study. The use of participants with various language backgrounds and the matching of groups potentially restrict systematic biases contributing to the results of the statistical analysis, similar to Derwing and Rossiter (2005), and Derwing, Munro, and Wiebe (1998). Furthermore, the use of expert listeners contributes to the credibility of the conclusions that can be drawn.

In this study a reading task was used in assessment due to the use of a reading task in the archived tapes. A reading task rather than a spontaneous speech sample may restrict comparison to other studies and limit statements pertaining to generalizability of the results. In addition, the author did not describe how many archived tapes could have been used, and were not, and her reasons for selecting certain tapes over others. Therefore, it is unknown whether any selection bias occurred.

Considering the strengths and limitations, this study demonstrates suggestive evidence for using suprasegmental approaches in accent modification therapy.

In 1999, Fraser wrote a level 5 expert opinion paper. The purpose of this report was to support using suprasegmental based communicative approaches in accent modification. This report argues for the effectiveness of suprasegmentals in accent modification. It was written by a recognized expert in the field describing clinical opinion with some review of the published literature; however, it does not provide a systematic review of current literature on the topic. Such reports are subject to potential bias without explicit critical appraisal. Given this information, this report offers some suggestive evidence for the effectiveness of suprasegmental instruction that should be interpreted with caution.

Brown (1995) is also a level 5 expert opinion paper. The purpose of this report was to suggest that a segmental approach to accent modification is less useful than other approaches, and in effect, should be used to a lesser degree than it currently is.

Brown provides a review of current issues related to problems with providing instruction solely on segmental features and a rationale for focusing on suprasegmentals. However, the aim of the paper was not to provide a comprehensive critical analysis of current research. Brown is a recognized and well-published researcher in the area, yet expert opinions must be considered with caution since it may be open to subjective bias.

Considering the limitations, this report may be interpreted as justification for further exploration into the effectiveness of segmental vs. suprasegmental training.

Discussion

The five studies reviewed above reveal similar results with regards to the effectiveness of suprasegmental instruction in accent modification. Overall, four of the studies suggested that suprasegmental training is more effective than segmental training in improving positive speech characteristics. One study suggested that both methods of instruction can lead to significant improvements. Given the level of some of the evidence (i.e. expert opinion), and some methodological limitations found within these studies, these results may be interpreted with caution.

Although all studies were presumably evaluating the effectiveness of two different instructional methods, it is clear that there are various means by which this can occur. For instance, studies using quasi-experimental or experimental designs used different speech tasks, Likert scales, and constructs (i.e. comprehensibility, fluency, accentedness, etc.) for pre- and post-therapy assessment measures. One study used 37 words in a paragraph reading against a 5-point Likert scale on 'perception of comprehensibility', another study used 45 seconds of an extemporaneous narrative against 3 different 9-point Likert scales (comprehensibility, accentedness, and fluency) and finally one study used the same 9-point Likert scales but against both sentences and narratives. It difficult to discern whether these slight differences may have had an effect on the significance of the results that were obtained, despite the similar results across the studies. Indeed, there is no standard for measuring post-treatment success in accent modification, and there are various means

(reading, narrative, etc.) for obtaining speech samples.

Similarly, although participants were receiving accent modification training, they were not all enrolled in the same type of educational setting and for the same period of time. For instance, one study included participants enrolled in an accent modification course over a 16 week semester, and in the other two studies, participants were enrolled in an ESL course over a 12 week semester. Students enrolled in ESL coursework would receive a markedly different type of instruction than a course focusing only on accent training, since an ESL course potentially offers training on grammar, reading, writing etc., among other things. This has the potential to impact the effect size, and the validity of the conclusions that a specific accent modification method alone is associated with the increase in positive speech characteristics. However, it is true that all participants in the studies had 'intermediate' proficiency level in English, which perhaps helps control for effects of different educational settings. Yet not all studies adequately reported their means of determining intermediate level of proficiency.

Despite the different assessment and treatment procedures amongst the quasi-experimental/experimental studies, it is apparent that more studies support the use of suprasegmental instruction in accent modification therapy.

Clinical Implications

Given this review, there are important clinical and educational considerations. Overall, there is suggestive evidence that suprasegmental instruction is an effective technique in modifying foreign accents or improving positive speech characteristics. Given the current state of training for accent modification instructors, more focus on the nature of English language intonation, timing/rhythm, and stress should be included in instructor training. In addition, clients themselves should be receiving more training on the nature of English suprasegmentals.

Although there is no regulation to be qualified as a specialist in accent modification, and a lack of scholarly research on the most effective method, this review helps guide instructors in a direction toward methods based on research evidence. More supportive evidence is needed in order to make significant or widespread changes in training for instructors. In addition, more research examining why suprasegmental instruction may be more effective than segmental instruction is needed.

Finally, perhaps a unified way of assessing changes in positive speech characteristics is warranted. The growing demand of motivated workers seeking accent modification services should be met with an equally fervent desire of instructors to supply the most effective teaching method. That is, one that is in the best interest of their clients.

References

- Anderson-Hsieh, J., Johnson, R., & Koehler, K. (2006). The relationship between native speaker judgments of nonnative pronunciation and deviance in segmentals, prosody, and syllable structure. *Language Learning*, 42(4), 529-555.
- Barb, C. (2005). *Suprasegmentals and comprehensibility: A comparative study in accent modification* (Doctoral dissertation, Wichita State University).
- Breitkreutz, J., Derwing, T. M., & Rossiter, M. J. (2009). Pronunciation teaching practices in Canada. *TESL Canada Journal*, 19(1), 51-61.
- Brown, A. (1995). Minimal pairs: minimal importance?. *ELT Journal*, 49(2), 169-175.
- Derwing, T. M., & Munro, M. J. (1997). Accent, intelligibility, and comprehensibility. *Studies in Second Language Acquisition*, 19(1), 1-16.
- Derwing, T. M., & Rossiter, M. J. (2003). The effects of pronunciation instruction on the accuracy, fluency, and complexity of L2 accented speech. *Applied Language Learning*, 13(1), 1-17.
- Derwing, T. M., Munro, M. J., & Wiebe, G. (1998). Evidence in favor of a broad framework for pronunciation instruction. *Language Learning*, 48(3), 393-410.
- Fraser, H., & Perth, H. (1999). ESL pronunciation teaching: Could it be more effective? *Australian Language Matters*, 7(4), 7-8.
- Jenkins, J. (2004). Research in teaching pronunciation and intonation. *Annual review of applied linguistics*, 24(109-125).
- Munro, M. J., & Derwing, T. M. (1995). Foreign accent, comprehensibility, and intelligibility in the speech of second language learners. *Language Learning*, 49(1), 285-310.
- Schmidt, A. M., & Sullivan, S. (2003). Clinical training in foreign accent modification: A national survey. *Contemporary Issues in Communication Science and Disorders*, 30, 127-135.
- Tajima, K., & Port, R. Dalby J. (1997). Effects of temporal correction on intelligibility of foreign-accented English. *Journal of Phonetics*, 25(1), 10-24.