

# CROSS-MODAL REINFORCEMENTS IN PHONETICS TEACHING AND LEARNING; AN OVERVIEW OF INNOVATIVE TRENDS IN PRONUNCIATION PEDAGOGY

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## ABSTRACT

The present contribution provides an overview of some innovative approaches to pronunciation pedagogy, focusing on cross-modal reinforcements aimed at facilitating the process of L2 phonological perception and production.

The paper starts with a brief introduction into recent theories of multisensory integration and proceeds with practical suggestions for multimodal reinforcements integrating visual, auditory, kinaesthetic and metacognitive domains of L2 pronunciation teaching and learning. The proposal includes sensory stimulations in the form of articulatory warm-up exercises, assigning vivid symbolic characteristics to target language sounds, phonetic colour coding and the development of conscious metacognitive phonetic strategies.

**Keywords:** multimodal reinforcement, sound symbolism, sound-colour mapping, metaphonological awareness.

## 1. INTRODUCTION

The paper aims to present an overview of innovative trends in pronunciation pedagogy, focusing, in particular, on the multisensory approach to foreign language learning. The major tenet of the proposal is that foreign language speech perception and production may be mediated through various sensory modalities, supplementing the auditory channel by visual, tactile and kinaesthetic reinforcements. It is based on the assumptions of current psycholinguistic findings that point to the common occurrence of cross-modal audio-visual mechanisms in the normal population [1]. Moreover, research results in the related disciplines of phoniatrics and logopedics demonstrate the superiority of multisensory stimulation over reliance on one modality only and promote the so called integral stimulation approach, in which all available sensory stimuli

aids are used in the therapy. Therefore, the claim pursued in the present paper is that by exploring some cross-modal reinforcements the process of L2 phonological perception and production may also be facilitated and enhanced.

## 2. ARTICULATORY WARM-UP

One of effective ways of applying kinaesthetic reinforcement to pronunciation training is through physical strengthening exercises, i.e. articulatory warm-up that aims at a greater articulatory agility and regaining conscious control over the process of articulation. It can be achieved through pre-speech physical preparation including proper postural alignment, muscular tension release, vocal workout, massaging face and jaw muscles as well as lip and tongue activation. The examples of articulatory warm-up exercises that can be used regularly at the initial stages of pronunciation classes have been adopted from guidelines for interpreters as well as logopedic and phoniatric sources [2, 3] and include as follows:

(1) Opening and extension of the jaw for tension release and mobility

- massaging the jaw hinges, letting the jaw lower and raising it with hand movements,
- imagining some air between back molars and chewing it gently in slow motion, allowing the space to get larger as one continues,
- holding the chin steady with the hand, allowing the head to fall back gently and letting it roll back again,
- saying blah, blah, blah repeatedly, letting the jaw drop rapidly and loosely each time.

(2) Strengthening of the lips

- rubbing the lips against one another as if putting on lipstick,
- air kissing repeatedly fast and loud with strong lip protrusion,
- making the following vowel shapes repeatedly with strong lip rounding and spreading: ooooweeeeeeeeoooooweeeeeeee.

- (3) Protrusion and retrusion of the tongue
- trying to touch the chin with the tongue tip with pulsing stretches,
  - tucking the tongue behind the lower teeth and pushing it out in a pulsing manner,
  - drawing a figure eight in the air in both directions by means of the tongue,
  - activating the tip of the tongue, touching the alveolar ridge repeatedly.

The effectiveness of these warm-up exercises has been tested in practice by the present author and they have been reported to result in muscular tension release leading to improvement in L2 oral production.

### 3. SOUND SYMBOLISM IN PRONUNCIATION PEDAGOGY

Other unorthodox means of providing additional aural or visual reinforcements in the teaching of foreign language phonetics may involve the application of sound symbolism or acoustic iconicity, i.e. non-arbitrary representations of a phoneme by specific semantic criteria. Sound symbolism is usually demonstrated in the matching of a phone to polar adjective pairs like small/big, bright/dark, etc. For instance, sounds with a characteristic high-frequency component such as /i:/ and /ɪ/ are typically associated with small size, sharpness, rapid movement and physically high objects, whereas low frequency sounds, e.g. /u/ and /a/ tend to symbolise large size, softness and slow movement, physically low objects [4].

Different manifestations of phonetic symbolism have been investigated including a study into synaesthetic associations, i.e. visualising English vowel sounds in terms of different sensory and emotionally-loaded representations [5]. The results point to the possibility of iconic representations that may accompany and reinforce conscious perceptual experience of speech sounds and thus be applicable to the process of foreign language teaching. The synaesthetic associations with English vowels generated in the study demonstrated systematic patterns of distribution, similar to those widely discussed in the literature [4], in which specific phonemic features trigger particular sensory attributes of size, luminescence, texture and location as well as emotionally-loaded connotations. It is claimed that if a form of vocalisation is linked to meaning as is the case in sound symbolism, the potential for accurate and

fast comprehension and stimulus detection is enhanced. Therefore, through assigning vivid symbolic characteristics to the target language sounds, long-term auditory memory is enhanced, L2 phonemic representations are reinforced, and additional affective learning pathways are activated.

Practical pedagogical implications of acoustic iconicity have been explored by Wrembel [5], who presented an overview of innovative pronunciation activities based on sound symbolic associations. For example, a synaesthetic classroom activity which requires the learner to associate sounds with other senses, i.e. tastes, textures or colours in order to distinguish better between pairs of target sounds is Laroy's *Sounds and senses* [6]. For this purpose contrasting sound pairs are ascribed to particular polar adjectives (savoury vs. sweet; plain vs. spicy; raw vs. cooked) to make them more memorable through reinforcing mental representations of L2 sounds and creating additional sensory links, either visual, proprioceptive or tactile. In a perceptual tuning activity *My perception of English* [6] the learners are encouraged to explore their symbolic reactions to the sound of English (e.g. when you listen to English it sounds like a drum or a violin; you feel like strolling or running; you can taste chocolate or sand). *Sound and movement* [6], in turn, constitutes a sound symbolic activity aimed at creating kinaesthetic representations of L2 sounds, i.e. classes of sounds are associated with particular movements which represent symbolically their inherent characteristics. Therefore, short vowels tend to be represented with short movements with a hand or finger to mirror the movement of the tongue, while long vowels are portrayed by larger hand or arm movement. Voiceless plosives are mirrored by short sudden movements like clapping, whereas fricatives and affricates by larger movements like pushing outwards with hands. Similar activities geared at facilitating discrimination of the target speech sounds through associations with non-speech sounds rely on partially onomatopoeic metaphors or similes, e.g. /z/ - buzz bee, /p/ - cork popping, /aʊ/ - cat mewing [6]. Other examples of phonesthetic associations that can be applied to pronunciation teaching can be found in Kelly's [7] awareness-raising exercises, in which target language sounds are assigned symbolic labels, e.g. /i:/ a smiling sound, /u:/ surprising gossip, /ə/ Friday afternoon sound, /ɜ:/ 'something horrible' sound, /ɑ:/

'holding the baby' sound. All in all, cross-modal reinforcement activities can be applied to different types of phonetic instruction including both production and perception, preferably as part of the initial exposure but also in remedial teaching at any proficiency level.

#### 4. PHONETIC COLOUR CODING

Phonetic symbolism has also found its manifestation in the association of speech sounds and the colour spectrum, fostering another innovative application of visual channel reinforcement in pronunciation teaching.

Jakobson [8] was the first to apply colour terminology to speech sounds by identifying some regularities in vowel-to-colour associations on the basis of case studies in coloured hearing synaesthesia. According to him, chromaticity corresponds to the vertical axis of the vowel chart, thus the open vowels are regarded as maximally chromatic, i.e. red, whereas the light vs. dark colour distinction is related to the horizontal position of the tongue (i.e. front vs. back vowels). Jakobson's claim is consistent with research results in synaesthesia which demonstrate a strong correlation between auditory pitch and visual luminance as well as a general tendency to associate high pitch sounds with light colours and low tones with darker hues [9].

Although cross-modal mappings between auditory and visual stimuli have been extensively explored in research on synaesthesia, relatively few studies have investigated this phenomenon in non-synaesthetic perception. Smith et al. [10] conducted a study in which English speaking non-synaesthetes were tested on colour associations with exemplars of IPA cardinal vowels. The results demonstrated that open vowels generated high consistency responses related to maximally saturated red hues and front-unrounded vowels elicited higher luminance values than back-rounded vowels. A series of experiments on sound-colour associations was conducted by the present author [11, 12, 13].

The findings revealed a visible tendency for vocalic openness to generate optimal chromaticity since /a:/ and /æ/ were consistently mapped onto red. Close vowels tended to be associated with attenuated chromaticity, i.e. yellow/green/blue (/i:/ triggered strong associations with yellow and green, /u:/ with blue and brown). Achromaticity

was found to be related to neutral tongue positions as /ə/ and /ɜ:/ pointed to significant associations with grey. On the whole, the studies generated fairly consistent patterns of vowel-to-colour mappings for the English and Polish vowel repertoires. The results indicate a possibility of visual reinforcements by means of colours that may accompany conscious perceptual experience of speech sounds and thus be applicable to the process of foreign language teaching.

Potential pedagogical implications point to a system of mapping perceptual attributes between audio and visual senses. This may lead, for example, to the development of a colour-coded vowel chart that would function as a pedagogical aid based on the idea of multimodal reinforcement techniques. A preliminary proposal of such a coloured vowel chart based on the experimentally generated sound-colour correspondences was presented by the present author [11]. The application of the coloured vowel chart would involve better visualisation, reinforcement and practice of fine phonemic distinctions. Colour-coding could be further applied to facilitate the use of transcription symbols and to illustrate spelling-sound correspondence with graphemes being coloured in accordance with the master sound chart. A proposal for phonological representation in the light of colour terms was also put forward by Fraser [14], thus corroborating the potential of adding colour to pronunciation instruction to facilitate the acquisition of foreign language sounds.

#### 5. METACOGNITIVE REINFORCEMENT

Another trend that has received particular attention in pronunciation instruction nowadays is connected with metacognitive reinforcement. This type of reinforcement involves the application of metacognitive strategies such as self-monitoring and self-evaluation of one's L2 speech performance as well as selective or guided listening exposure. The application of metacognitive strategies, in turn, is dependent on the degree of phonological metacompetence and awareness of the language learner.

The term metaphonological awareness is understood by the author as consisting of the explicit knowledge of selected aspects of L2 phonetics and phonology, analytic awareness of the formal properties of the target language as

contrasted with the learners' L1 as well as a considerable level of processing control, i.e. intentional focus on phonetic forms and articulatory gestures during speech performance. In a long-term empirical study Wrembel [15] demonstrated that meta-awareness raising and conscious acquisition of explicit knowledge contributes to the development of L2 pronunciation competence more than pronunciation instruction devoid of metacognitive reinforcement.

The proposed framework aims to empower learners by equipping them with self-monitoring and self-correction strategies so that they may be involved consciously in the speech modification process. In practice, it entails helping L2 learners to develop self-rehearsal techniques (e.g. talking to oneself, audio- or videotaping presentations or rehearsing in small groups) as well as providing them with specific procedures for self-monitoring and self-diagnosis (cf. [16]). Further pedagogical implications involve the introduction of practical techniques based on consecutive steps of an increased degree of speech monitoring. A series of activities aimed at gaining conscious phonetic control over the process of foreign speech production may consist of the following: shadowing model speech, reciting memorised texts, acting out dialogues and plays, giving pre-prepared presentations and finally spontaneous speech.

## 6. CONCLUSIONS

The scope of the current paper goes beyond the mainstream pronunciation pedagogy as it promotes some unorthodox solutions based on the idea of multisensory integration with a view to enhancing the effectiveness of L2 pronunciation instruction. Theoretical assumptions of each proposal stemmed from the results of empirical investigations conducted in the respective areas. The presented multimodal reinforcements involved visual, auditory, kinaesthetic and metacognitive domains of L2 pronunciation teaching and were aimed at gaining more conscious control over the articulatory apparatus; visualising L2 sounds or phonological processes in terms of colours, emotions or other symbolic values; providing metacognitive strategy training and developing learners' metaphonetic awareness in the production of speech. Finally, it is hoped that the presented examples of practical activities will contribute to the better understanding of the existing potential of

cross-modal mechanisms that may be applied to broaden the repertoire of classroom techniques and to enrich the process of L2 pronunciation teaching and learning.

## 7. REFERENCES

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