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Musical Aptitude and Language: Activating Phonetic Skills through Music

Giedrė Balčytytė-Kurtinienė
Vilnius University (Lithuania)

Abstract

The idea of using music in ELT has been extensively amplified: music, or to be more specific songs, break the monotonous pace of a lesson, bring relaxation as well as the sense of collectivism and in most cases successfully serve as breaks from 'serious' work. The actual and fundamental features of music, however, seem to be rarely exploited for linguistic purposes, apart from mind relaxation and target vocabulary drilling. Several didactic trends and theories on distinct learning styles, intelligences and aptitudes [6], [7] suggest that the musical learner, i.e. the learner with enhanced musical aptitude, may benefit from music instruction not only on psychological but also on overall cognitive skill activation and information retention basis. Several scholars [11], [15], [19], [23] have attempted to analyse the impact of music on language skills at both the cognitive and neural levels and have noticed a tight relationship between the musical aptitude and the development of linguistic abilities. The most tangible relationship has been noticed between music and phonetic skill formation [16]. The activation of phonetic skills through music seems to have had a positive effect on the Lithuanian learners of English with enhanced musical aptitude in the present study: the correspondents demonstrated a higher sense for auditory sound discrimination, stresses, vowel reduction, rhythm and intonation of the target language.

1. Introduction

Recent years have manifested the rise of language-music integration for the purposes of foreign language acquisition and learning. Foreign language educators use music (most often songs) as a very effective tool that appeals to the students, breaks the monotonous pace of a lesson, brings relaxation as well as the sense of collectivism and in most cases successfully serves as breaks from 'serious' work. However, the actual and fundamental benefits of language-music integration lies in the comparative nature of these two types of knowledge and the positive transfer of extensive musical practice onto language skills. This results on psychological and overall cognitive skill activation (including linguistic purposes) as well as on information retention in the brain. The evidence for positive transfer emerges from a vast body of comparative studies on the relationship between language and music ranging from evolution, the nature and structural parallels to the instantiation of the two domains in the brain. Besides the areas of tangible relationship listed above, educationalists claim that significant correlations exist between music and foreign language development, thus the musical learner may benefit in the activation of linguistic skills through musical instruction.

1.1 Parallels between language and music

Recently, much research has been devoted to the convergence of music and language providing evidence that the two cognitive systems might share profound and critical connections. Scholars in diversified fields including linguistics, cognition, psychology, physiology, biology, neuroscience, ethology and even archaeology explore the two uniquely human features and provide arguments for tangible language and music analogies.

First, the analogy in the origins of language and music is drawn as a number of scholars argue for conceivable connections between the evolutionary pathways of the two domains. Brown [4] argues for a *Musilanguage* evolutionary model and suggests that music and language evolved from a conjoint ancestor, "the many structural features shared between music and language are the result of their emergence from a joint evolutionary precursor rather than from fortuitous parallelism or from one function begetting the other" [4: 271]. The universality of music is fully grounded by Mithen [14] who claims that musicality is a constitutional part of being human and that this capacity predates language since the pre-modern communication employed emotionally dense phrases "as also making extensive use of variation in pitch, rhythm and melody to communicate information, express emotion and induce emotion in other individuals" [14: 98]. The communication had the following features: "it was holistic, manipulative, multi-modal, musical and mimetic" [14: 98] meaning that language and music evolved and were used simultaneously.

Another argument for a linguistic-communicative merge is the so called *motherese* in which parents communicate to the pre-born and newly born children using highly vocalized singing notes. The parental language as well as the children's language is more musical than linguistic and only later it turns into the comprehension and production of linguistic speech [5], [20], [21].

Another area of research on the convergence of language and music that is receiving much attention at present is neurology. Traditionally, the processing of language and music information was attached to different roles of both hemispheres: the left hemisphere was supposed to be responsible for analytic and serial processing and the right hemisphere would account for more holistic and synthetic relations [3]. A rapidly growing number of neurological scientific experiments show that the mechanisms ruling language and music processes interact in the brain and share crucial links with respect to their constituent neurological processing [22].

Next, it is evident that both language and music carry meaning. Although the precise mechanisms underlying meaning in language and music differ, both domains communicate emotions and affective meanings. Some scholars further claim, that music can also convey iconic, indexical, and symbolic meaning [9] to heighten the similarities between language and music and offer further comparative considerations.

Finally, the analogy between language and music lies in the unassailable assumption that spoken language and music both involve sound production and are both conveyed through the auditory-vocal modality. The two domains are organized temporally with the particular arrangement of sounds unfolding in time: speech sounds in language and correspondingly tones or pitch events in music. The analogy goes beyond the sounds and segments and extends to the arrangement of sounds into hierarchic categories and structures that facilitate representation and memory [8], [18]. The Generative Theory of Tonal music (GTTM), as proposed by Lerdahl and Jackendoff [10] supports the structural analogies by utilizing some hierarchic approaches developed in linguistics to generate hierarchic structures in music. The suprasegmental cues (stress, rhythm, intonation and phrasing) seem to play the crucial comparative role in the hierarchical organization of the two systems.

1.2 Musical aptitude and phonetic skill development

The multi-disciplinary research discussed above helps to solidify and test the possible language and music integration into the present-day education and contribute to the benefits of language acquisition and learning. A number of scholars [11], [15], [19], [23] have attempted to analyse the impact of music on other cognitive domains as well as language skills at both the cognitive and neural levels and have noticed a positive transfer. Tomatis [23] developed a technique to stimulate aspects of human development and behaviour through ear by varying musical input. Originally the stimuli was used for healing purposes and language disorders, however the applicability of the technique may be expanded on the assimilation of foreign languages: the ear must be trained in order to hear foreign tones and overtones. Magne, Schon and Besson [11], Moreno and Besson [15] claim to have found behavioural evidence for a joint pitch processing mechanism in language and music perception which results in the assumption that extensive musical training helps to detect pitch violations language. Schellenberg and Peretz [19] argue for the relationship of music training and non-musical cognitive functioning and provide an extensive list of experiments that result in higher IQ scores of the participants. Eventually, the research expands on individual differences and suggests that the musical learner or the learner with enhanced musical aptitude demonstrates higher linguistic abilities [1], [2], [12], [13].

The idea is also supported by several didactic trends and theories on distinct learning styles, intelligences and aptitudes [6], [7] that suggest that the musical learner, i.e. the learner with enhanced musical aptitude, may benefit from music instruction on overall cognitive skill activation and information retention basis and thus should be approached via auditory input.

Since the musical aptitude is related to superior auditory discrimination of acoustic features, the most tangible language development discoveries have been noticed between the musical aptitude and phonetic skill activation and formation [13], [16]. Enhanced musical aptitude and simultaneous musical exposure seems to improve the ability of foreign language learners to distinguish between rapidly changing sounds, stresses, vowel reduction, rhythm and intonation.

2. The research data, methods and discussion

This particular study investigated the correlation between music aptitude and phonetic skill activation and development based on experimental data obtained from a classroom-based investigation that was conducted with 2 cohorts of Lithuanian EFL learners (n=47), aged 9-10. The participants had studied English as a foreign language for two years with the same instructor, the fact that puts them at roughly the same English proficiency level.

The main aim of the short-term experiment was to test the hypothesis that children with enhanced musical aptitude demonstrate better results in phonetic skills if the target input is supported by musical instruction.

Musical instruction (song in this case) as opposed to traditional text-reading instruction was implemented to check sound discrimination, stresses, vowel reduction, rhythm and intonation. The form of the song was chosen as it is considered to activate the work of both hemispheres and memory, moreover it can facilitate the development of the auditory capacity, improve sound/word discrimination and articulation, it exaggerates stress placement alongside with stressed and non-stressed syllables and explicitly provides rhythmic cues [17].

The subjects first had to take a musical aptitude test [24] and complete a questionnaire requesting information about their background and musicianship (which is not discussed in this particular research but may serve purpose for further investigations). Since musical aptitude can be defined as an untaught inherent ability, the distinction had to be made between the musical aptitude of the learners and the experience in music training. Though various musical aptitude tests have been proposed [24], this particular research followed and adapted the “Seashore Musical Aptitude Test” which is a standardized test checking a number of distinct musical inherent talents: pitch, duration, timbre, rhythm, loudness and tonal memory efficacy.

An experimental group of learners with enhanced musical aptitude I-MA was formed (n=18) while the rest participants (with low musical aptitude) formed a controlling group II-C (n=29). All the subjects were given an oral pre-test that comprised sound discrimination, stresses, vowel reduction, rhythm and intonation tasks. All the target entries were taken from a song text that children had not known before. Records and notes of the performances were carefully taken by the researcher. The experiment then proceeded and the test-factor was applied with the target input of a song format for I-MA and the target input of a text version for II-C. The experiment was carried out by the researcher, so both groups were tested under the same conditions. The oral post-test followed, which was again carefully recorded. The results indicated a significant change in pre-test and post-test stages, with the subjects in the experimental group scoring higher positive entries in the post-test.

3. Conclusions

The language-music relationship and integration review above aimed at introducing recent evidence about the convergence of the two domains and form the background for the test of whether musical aptitude could be an important factor in phonetic skill activation and formation. The evidence obtained from the implemented short-term experiment support the idea that musical instruction offers phonetically relevant advantages. The activation of phonetic skills through song had a positive effect on the Lithuanian learners of English with enhanced musical aptitude: the correspondents demonstrated a higher sense for auditory minimal pair sound discrimination, stresses, vowel reduction, rhythm and intonation of the target language.

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