INVESTIGATING AGE RELATED DIFFERENCES IN TIMBRE REPRESENTATION AND DISCRIMINATION

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BACKGROUND AND AIMS

For the development of age appropriate music education applications for the evaluation and training of timbre perception and discrimination, good insight in the development of timbre perception and age specific timbre mapping is necessary. However, research on the development of timbre discrimination and representation is very scarce.

The present study aims at gaining a deeper insight in the development of timbre perception skills and the results will contribute to the development of an age appropriate training application for timbre perception skills in children. We look both at age related differences in timbre mapping based on similarity judgements by adults and primary school children, and age related differences in timbre identification and representation skills.

METHOD

Both adults (n=36, mean age=30,47, stdev=11,81) and primary school children of the 2nd (n=34, mean age= 7,32, stdev=0,53), 4th (n=68, mean age=9,34, stdev=0,59) and 6th grade (n=77, mean age=11,31, stdev=0,49) were asked to fill out a questionnaire investigating timbre representation and timbre discrimination skills. The questionnaire consisted of two different tasks: (1) scoring similarity of three sets of timbre pairs on a 9 point scale, from very dissimila to very similar, and (2) identifying or describing these sounds. The three sound sets were: (1) a combination of four sets with four sounds each: familiar instruments, unfamiliar instruments, abstract soundscapes and woodwinds, (2) a more elaborate set of 8 orchestral instruments and (3) a sound set of six electronically produced sounds with different more time related acoustical effects (a.o. fade in, fade out, …). All stimuli had a duration of one second and within each set, all sounds had the same pitch.

RESULTS

Analysis of the data shows that sound representation is clearly age related. Adults succeed much better in correctly identifying timbres or representing sound quality and sound producing aspects. With the primary school children we see that fourth graders (9/10 y.o.) are capable of representing abstract musical sounds, whereas children in the second grade (7/8 y.o.) have great difficulties with this task. These results are reflected in the similarity ratings. On average, the similarity ratings of the second graders ressemble those of older children and adults. However, their between-subject variance significantly increases when more abstract sounds are used, suggesting they have difficulties to judge the similarity correctly. The more close and abstract the offered timbres become, the stronger the linear

decrease of between-subject standard deviations. Interestingly, for the third sound set of electronically produced sounds with more time related acoustical effects, results are different. Here results are very close for all grades, and very little evolution of between-grade standard deviation for the different sound pairs can be found. This indicates that less difficulty is experienced in discriminating abstract sounds with a focus on time related sound effects. Again this is supported by the representation results for this sound set, showing that even second graders are capable of given an action-oriented or free association for the sounds in this set, whereas they had more difficulties in representing the sounds in the previous sets.

CONCLUSIONS

Timbre representation and timbre discrimination skills are age specific and interrelated. Up to 9 years old, children have difficulties with representing or describing abstract musical sounds, directly impacting their ability to judge similarities between musical timbres correctly.

KEYWORDS

Timbre perception, sound representation, musical development, timbre mapping.

TOPIC AREAS

Musical development
Musical timbre