DEVELOPING CAPACITY AND MUSIC COGNITION IN CHILDREN: RELATIONAL COMPLEXITY AND TRANSITIVE INFERENCE USING PITCH AND DURATION

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Background

This experiment investigates an aspect of Halford's (1993) theory of cognitive development in the auditory domain. Halford conceptualises the development of children's thinking and understanding as an increase in cognitive capacity and ability to deal with problems of increasing relational complexity. Relational complexity refers to the number of independent relations that need to be processed in parallel to solve a problem or complete a task. Working with visual, spatial and verbal stimuli, Halford and his colleagues have demonstrated that children aged one year can perform unary level tasks, at around two years can perform binary level tasks, by age five can perform ternary level tasks, and by age eleven most can accomplish quaternary level tasks.

Aims

The aim of the experiment is to test predictions of Halford's theory of cognitive development in an auditory context.

Method

Patterns that differed in relational complexity were composed and presented to children in the form of analogical reasoning and transitive inference tasks. The sequences consisted of pitch- or duration-based relations.

Results

As hypothesized, children's ability to perform the tasks of increasing relational complexity was predicted by their age. Additionally, duration-varying patterns were responded to less accurately than pitch-based patterns at unary and binary levels.

Conclusions

The results support a mental models view of cognitive development and the relevance of relational complexity, processing load and conceptual chunking in audition. Theoretical and practical implications for considering auditory cognition in general, and music perception, production and learning in particular, in terms of relational complexity and chunking, are discussed.

ISBN: 3-931852-66-0
ISSN: 1617-6847