

ON THE INVOLVEMENT OF PHONOLOGICAL WORKING MEMORY IN THE PROCESSING OF RHYTHMS

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Background

The study addresses the role of phonological working memory in the processing of musical rhythms in children and adults.

Aims

The aim of our study was to disentangle structural aspects within a rhythm that affect performance. This was obtained by varying aspects within the presented rhythms which are considered relevant to phonological working memory performance. Variations consisted of complexity and absolute duration of the rhythm as well as the usability of strategies. Furthermore we investigated the relation between these factors and the development of rhythmic ability.

Method

60 Children aged six to ten years and 21 adults participated in the study. Each subject had to reproduce auditorily presented rhythms and to discriminate two rhythms that were presented immediately one after the other. A span procedure was applied. The rhythms varied along the dimensions *complexity* (simple/ complex), *duration* (short/ long) and *metric organization* (metric/ non-metric).

Results

Firstly, a general age effect could be found for both conditions (reproduction and discrimination). There was also a main effect of complexity, meaning that the simple rhythms could be reproduced and discriminated more easily than the complex ones. Furthermore in the simple condition, metrical rhythms were easier to discriminate than non-metrical ones, whereas within the complex condition, the discrimination of non-metrical rhythms was easier. It didn't make any difference whether the duration of the rhythms was normal or temporarily expanded (by the factor 1.4). Results indicate that an analogue to the phonological *word length effect* within the processing of rhythms could not be found. The effect of complexity as well as the age differences indicate that short-term memory strategies seem to play a crucial role in the processing of rhythms.

Conclusion

We assume that several strategic factors of phonological working memory as well as age related changes in capacity influence rhythm processing.