

# THE ROLE OF WORKING MEMORY AND SHORT-TERM MEMORY IN SIGHT READING

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## Background

Sight reading is a functional skill which is required by all musicians, however the differences between individuals in sight reading achievement have not yet been fully explained. Until now, most research has compared different methods of teaching sight reading without providing a feasible theory behind sight reading.

## Aims

Sight reading can be divided into 3 stages; information intake, information processing and performance. This paper emphasises the importance of the second stage of sight reading by studying the role of working memory, short-term memory and mental speed in sight reading. This paper demonstrates that working memory and short-term memory capacity and mental speed could be three important predictors for sight reading achievement.

## Method

(a) Sight reading task. For the sight reading task, Lehmann and Ericsson's (1993) paradigm of a pre-recorded pacing melody was used. Stimuli consisted of 2 warm up pieces and 5 pieces with increasing complexity. These pieces were taken from existing sight reading literature and a solo part was added. Subjects were required to accompany the pre-recorded violin part.

(b) Memory task. For the measurement of working memory capacity and short-term memory capacity, the procedure used in Oberauer et al. (2000) is used in this paper. Working memory test requires the subjects to do more than one simple numerical calculation simultaneously, which are presented in different active cells on the computer screen. The short-term memory test requires the subjects to recall the correct order of numbers which are shown one after the other on the computer screen. Both tests increase in complexity.

(c) Mental speed task. To measure the mental speed, we used the Oswald and Roth's (1987) The Number Connection Test (Der Zahlen-Verbindungs-Test, ZVT). 52 piano students from the Hanover University of Music and Drama served as subjects.

## Results

Results from Spearman's rank correlations show a clear relationship between general cognitive skills and sight reading performance. It will be demonstrated that this may lead to a feasible theory behind sight reading achievement.

## Conclusion

The main conclusion is that sight reading skill should be explained within the framework of general cognitive skills. Working memory, short-term memory and mental speed are significant predictors for sight reading achievement. The relationship between cognitive factors and acquired sight reading expertise will be addressed.