

BAR-ILAN UNIVERSITY

**The Effect of Training and the Ability to Transfer
the New Knowledge, in Learning a Motor Skill
among Preschoolers**

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ABSTRACT

Learning motor skills is a slow process which requires many repetitions. The literature on the acquisition of motor skills among children aged 5-6 years indicates that based on speed and accuracy scales, children have a grapho-motor learning ability which can be improved by practice. Another scale for learning assessment which this study focuses on is the transfer of learning. Transfer of learning is the ability to use old learning for a different skill when there is some similarity or a shared identical principle between both skills. A high level of transfer of learning occurs when the performance of the new task is similar to the old one.

This study examined the graph-motor learning process after practice and 24 hours later, among kindergarten age children with normal development indicators. In order to investigate the transfer of learning of a new sequence, so the acquisition of automation while learning a sequence will provide transfer of learning to a different sequence.

This study had three main purposes. The first is to examine will there be a graph-motor learning in a practice of “Letters-Images Task”. In order to investigate this ability among children who have already acquired the ABC, special letters were invented for this task which is called components and the ability of the subjects to acquire a new sequence of six components was measured.

The second purpose was to evaluate transfer ability to different sequence of same components or different components due to new graph-motor learning. For this purpose a comparison was made between the transfer ability to a different sequence

with the same components (as the subject trained for) and the transfer ability to a sequence of new components. This indicated whether graph-motor learning includes a specific sequential representation of components or a general representation of the entire sequence.

The third purpose was to examine the connection between graph-motor learning abilities and the meta-linguistic capabilities (phonologic awareness, letters knowledge, writing, and working memory) which underlie the acquisition of reading and writing.

The study sample included 32 children (16 boys, 16 girls), at an average age of 5:7 years, all of them from a high socioeconomic background. Screening tests were conducted to examine the suitability of the study population by using the Beery Test for fine motor skills evaluation prior to this study. To screen those with fine motor skills difficulty. The subjects were divided into two groups: One group was called S (Sequence) and the other group was called DC (Decoding). Both groups practiced during the first session on 16 practice blocks which included a repetitive sequence of invented letters. At the second session, group S was requested to practice on another motor sequence, which was different from the motor sequence they had learned in the first session, but composed of the same components presented to them in the first session. The DC group was requested to practice on another motor sequence which was composed of different components from the ones they had practiced a day earlier. Additionally, all the study participants were given tests to evaluate their reading and writing abilities.

The study findings indicate that the children in both groups demonstrated normal graph-motor learning ability to the original sequence which was acquired due practice. However, both groups didn't demonstrate transfer learning to the new sequence, and their results dropped comparing to the final practice of the original sequence. In addition, group S demonstrated higher results and a significant advantage on speed and accuracy scales over group DC. This advantage indicates that the transfer ability of learning as a result of graph-motor learning in the first session was demonstrated (into certain extent) in the second session. Permanent gap between both groups was maintained during the entire second practice session. These findings indicate that sequence learning is also acquired for sequence components and not just for the sequence as a whole. Furthermore, this study shows high correlation between the subjects' results and the abilities which underlie reading and writing skills.

This is a first of its kind research which evaluates graph-motor skills among kindergarten children with “Letters-Images Task”. This task can be used as a platform for further in-depth studies on the connection between graph-motor learning ability and the transfer of learning ability among the *dyslectic* population as well.