



Training given to preferred hand improves performance in non-preferred hand- Transfer of Learning

Dr. Nethravathi R, Dr. Beena Daliya, R, Dr. Chetna Lakhotia

Assistant Professor, Indian Institute of Psychology and Research, Bangalore.

Abstract

Transfer of Learning is used to describe the effects of past learning upon present acquisition. In the laboratory and in the outside world, how well and how rapidly we learn anything depends to a large extent upon the kinds and number of things we have learned previously. Transfer may be defined as “the partial or total application or carryover of knowledge, skills, habits, attitudes from one situation to another situation”. The present study aim was to study the if training given to preferred hand improves performance in non-preferred hand. The hypothesis was Training given to one hand improves performance is non preferred hand. The Bilateral Transfer Material was used to for the study. The sample consist of 133 under graduate students. The findings of the study were t value are lesser than the table value. The results of the study support the hypothesis that training given to one hand improves performance in non-preferred hand.

Key Words: Training, Performance, Preferred and non-Preferred hand

Introduction

Malcolm Knowles, “Learning is the process of gaining knowledge and expertise.” Learning is an adaptive function by which our nervous system changes in relation to stimuli in the environment, thus changing our behavioural responses and permitting us to function in our environment. According to Pavlov’s classical condition Learning is a process by which we learn to associate events, or stimuli, that frequently happen together; as a result of this, we learn to anticipate events. Thorndike coined the term of Law of Effect and Operant conditioning is the learning process by which behaviours are reinforced or punished, thus strengthening or extinguishing a response. Albert Bandura explained about the Observational learning occurs through observing the behaviours of others and imitating those behaviours—even if there is no reinforcement at the time.

Transfer of Learning is used to describe the effects of past learning upon present acquisition. In the laboratory and in the outside world, how well and how rapidly we learn anything depends to a large extent upon the kinds and number of things we have learned previously. Transfer may be defined as “the partial or total application or carryover of knowledge, skills, habits, attitudes from one situation to another situation”. Hence, carryover of skills of one learning to other learning is transfer of training or learning. Such transfer occurs when learning of one set of material influences the learning of another set of material later. For example, a person who knows to drive a moped can easily learn to drive a scooter. Transfer of Learning has three types. Positive transfer of learning, Negative transfer of Learning and Neutral transfer of learning.

The bilateral transfer of learning is the transference of physical performance learned by one side of the body to the opposite side of the body. For instance, once a person has learned to shoot a basketball with their right hand it is not difficult to transfer that learning to the left hand. This transfer of learning is made possible by the two-way information traffic that exists through the corpus callosum, the band of fibres in the brain that allows the two hemispheres to communicate and transfer information. William M Land (2016), conducted a study on bilateral transfer suggests that imagery training can facilitate the transfer of motor skill from a trained limb to that of an untrained limb above and beyond that of physical practice. The study examined the influence of practice duration and task difficulty on the extent to which imagery training and physical training influences bilateral transfer of a sequential key pressing task. findings suggest that imagery training may benefit bilateral transfer primarily at the initial stages of learning, but with extended training, physical practice leads to larger influences on transfer. The transfer of skill from one part of the body to another was first observed by E.H. Weber. Milisen and Van Piper (1939) pointed out that maximum transfer was there from one hand to another when the required movements were symmetrical. E.H Weber had started the work of scientific transfer. He observed that some children trained to write with the right hand were able without further training to produce very good mirror- writing with the left hand. It seems almost certain that the locus of practice effect is the cerebral hemisphere. Practice leaves behind some changes in the neural structure or condition. Callosal Access Model postulates that motor programs are stored in the dominant hemisphere irrespective of the hand used in training. The Supplementary Motor Area is centrally involved in the inter- hemispheric transfer of motor learning.

METHODS

Objective of the Study

To study if training given to preferred hand improves performance in non-preferred hand.

Hypothesis:

Training given to preferred hand improves performance in non preferred hand.

Variables:

Independent Variable: Training given to the preferred hand in mirror tracing activity

Dependent Variable: Performance-Time taken and errors committed in mirror tracing- in the non-preferred hand before and after training.

Materials

1. **Socio demographic profile sheet.**
2. **Mirror tracing board with reset type impulse counter and built rectifier:**

Instructions to the participant: At the signal 'start', start tracing the pattern with the stylus without touching the edges, as fast as possible until you reach the starting point. When you touch the edges, you will hear a sound which is counted as an error. While tracing, do not look at the star pattern directly, look only at its reflection in the mirror”

Scoring: Scores as given based on the basis of time taken by the student and no. of errors committed by the student

Sample Description:

The sample chosen for the study were students in the age range of 18 to 21 years. All of them were residents of Bengaluru.

Sample Size:

Sample chosen for study consists of 133 students.

Inclusion Criteria:

1. First year of under graduate students
2. Students residing in Bengaluru.

Exclusion Criteria:

1. Participants with any form of permanent or temporary physical handicap that affects the use of hands
2. Participants who have had prior exposure to similar task

Procedure:

Subjects fulfilling the study criteria were met personally by the researcher. The purpose of the experiment was explained to them and participation done only after obtaining their consent. The subject was seated comfortably and rapport was established with the subject. The required socio demographic data was collected from the subject and the experiment was conducted.

Place the mirror tracing board in front of the subject and find which is the preferred hand of the subject. The experiment is carried out in the following manner- Series 1-Assess the baseline performance in non-preferred hand, Series 2- five trials of training in mirror tracing using preferred hand, Series 3- Assess the performance again in non-preferred hand and compare it with the baseline performance.

Series I: Mirror tracing using the Non-Preferred hand:

The subject is asked to trace the pattern with the stylus with his/her non preferred hand, not looking at the star directly but seeing its reflection in the mirror. The subject should trace the star without touching the sides. Whenever this happens, the counter makes a clicking sound indicating an error. Give the signal to start and start the stopwatch simultaneously. Note the time taken and the error committed to trace the pattern using the non-preferred hand.

Series 2- Training in mirror tracing using preferred hand:

Training: Give five trials to the subject to trace the star pattern with the preferred hand. Note the time taken and the errors committed in each trial.

Series 3: Mirror tracing using the Non preferred hand after training

Following the same procedure, ask the subject to trace the star pattern with the non-preferred hand again. Note the time taken and no. of error committed.

It has to be noted that while tracing the star pattern, follow clockwise direction for the right hand and anticlockwise direction for the left hand.

Analysis of Data:

1. The time taken and errors committed while tracing the reflection of the star pattern on the mirror tracing board is noted down for all three series.
2. Compare time and error scores of the non-preferred hand before and after training using descriptive statistics and paired sample t test to find if there is significant difference in performance before and after training.

Analysis and Discussion

The study was administered on a group of undergraduate students. The aim of the study was if training given to preferred hand improve performance in non-preferred hand. Training is given to the preferred hand in mirror tracing activity, and with the subject performance time taken and errors committed in mirror tracing in the non-preferred hand before and after training to prove that training given to one hand improves performance in non-preferred hand.

Table 1 shows the total, mean score of time taken and errors committed in series I and II, and the t value.

		Total	Mean score	SD	t Value
Time Taken	Series I	7656 sec	57.56 sec	35.74	10.04
	Series II	3865 Sec	29.06 Sec	14.32	
Errors Committed	Series I	4980 Sec	37.44 Sec	26.30	7.98
	Series II	2918 Sec	21.93 Sec	13.18	
N		133			

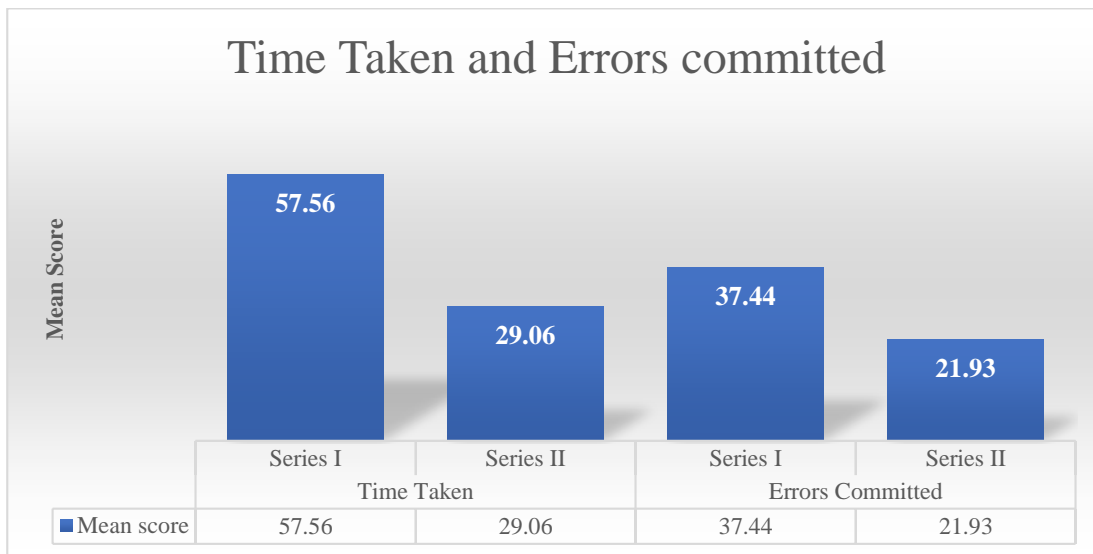
Table 1 shows the total, mean score of time taken and errors committed in series I and series II, and the t value for both time taken and errors committed. The mean value of time taken in series I is 57.56 sec and in series II is 29.06 sec and the mean value of errors committed in series I is 37.44 and in series II is 21.93, that in both the time taken and errors committed from series I to series II total and mean score has been decreased which shows that the training given to the preferred hand have increased performance in the non-preferred hand.

A t test is conducted to know the significant difference from series I to series II in both time taken and errors committed. The t value for time taken is 10.04 and for error committed is 7.98 both the t value is lesser than the table value so we are retaining the alternative hypothesis or support the hypothesis that the training given to preferred hand improve performance in the non-preferred hand. Previous research supports the results stating that training given to one hand improves the performance of other hand (John Liu (2013)).

The main purpose of any learning is that a person who acquires knowledge and skill in a formal and controlled situation like a classroom or a training situation, will be able to transfer such knowledge and skill to real life situation and adapt himself more effectively. Transfer of learning involves generalization, where two tasks are similar. If there is a certain degree of similarity between the first and second tasks then transfer make take place.

Transfer of learning is important for students. students would need to be taught every act that they would ever perform in any situation. Because the learning situation often differs from the context of application, the goal of training is not accomplished unless transfer occurs All new learning involves transfer based on previous learning.

Graph shows the Time taken and Errors committed mean value by the group in series I and series II.



Graph shows the mean value of time taken (blue block) series I with non-preferred hand before training and series II with non-preferred hand after training given to the preferred hand. The mean value of errors committed (red block) series I with non-preferred hand before training and series II with non-preferred hand after training given to the preferred hand. We can see through the graph that both in time taken and errors committed have decreased from series I to series II. Hence the group as a whole support the hypothesis that training given to preferred hand improves performance in non-preferred hand.

Conclusion

1. The mean value of the group in time taken and errors committed have decreased from series I to series II to which shows that the group has whole support the hypothesis that training given to one hand improves performance in non-preferred hand.
2. A t test was calculated and the t value for time taken is 10.04 and for error committed is 7.98 both the t value is lesser than the table value. The results support the hypothesis that training given to one hand improves performance in non-preferred hand.

References

Ausenda CD, Togni G, Biffi M, Morlacchi S, Corrias M, et al. (2014) A New Idea for Stroke Rehabilitation: Bilateral Transfer Analysis from Healthy Hand to the Paretic One with a Randomized and Controlled Trial. *Int J Phys Med Rehabil S3*: 008. doi: 10.4172/2329-9096.S3-008

Land, William & Liu, Binya & Cordova, Alberto & Fang, Ming & Huang, Yufei & Yao, Wan. (2016). Effects of Physical Practice and Imagery Practice on Bilateral Transfer in Learning a Sequential Tapping Task. *PloS one*. 11. e0152228. 10.1371/journal.pone.0152228.

Liu, John & Wrisberg, Craig. (2005). Immediate and Delayed Bilateral Transfer of Throwing Accuracy in Male and Female Children. *Research quarterly for exercise and sport*. 76. 20-7. 10.1080/02701367.2005.10599258.

