

BILATERAL TRANSFER OF LEARNING

AIM: To study the bilateral transfer using a sensory motor task

BASIC CONCEPTS:

Learning is a key process in human behaviour. It is a process that results in a relatively consistent change in behaviour potential and is based on experience. Learning is a process that depends on experience and leads to long term changes in behavior potential. Behavior potential designates the possible behaviour of an individual, not actual behaviour. The main assumption behind all learning psychology is that the effects of the environment, conditioning, reinforcement, etc. provide psychologists with the best information from which to understand human behaviour.

As opposed to short term changes in behavior potential (caused e.g. by fatigue) learning implies long term changes. As opposed to long term changes caused by aging and development, learning implies changes related directly to experience.

SENSORY MOTOR LEARNING: It includes learning a sensory motor skill. These are skills in which muscular movement is prominent but under sensory channel control. Riding a bicycle, playing a piano and typing are some examples of sensory motor skills. These skills are especially dependent upon information provided by the sense organs. Sensory motor skills are simply patterns of skilled movements. They involve the coordination between various sense organs which execute the movement thereby calling attention to the sensory control of skills. Whatever we learn tends to get transferred and we try to use our previous learning in different situations.

TRANSFER IN LEARNING: A man's activities (everyday's experiences) show that each activity is in succession to the other. When an organism undergoes new task and new problems, its behaviour may be seriously affected by the results of past learning and conditioning. It is only through such cumulative effects of learning that steady intellectual development and growth, progressive refinement of skills and creative thinking are made possible. Thus, whenever one activity affects another following it (either by facilitating it or interfering with it, there is set to be transfer). As Sandiford pointed out, all education is based on the existence of phenomena of transfer. The educators object it to teach a child or an adult principles or methods for dealing with specific task in different situations. There are different kinds of transfer:

- a) **POSITIVE TRANSFER:** Its effects occur if experience facilitates the acquisition of a new skill or solution of a new problem placed in the new situation. The learner performs significantly better than he would without the benefit of past training.
- b) **NEGATIVE TRANSFER:** Its effects are inferred if past experience renders more difficult or slows down the acquisition of a new skill or the solution of a new problem. Placed in the same situation, the learner performs more poorly than he would perform without training.
- c) **ZERO TRANSFER:** It denotes the fact that performance in the new situation is neither aided nor hindered by the past training. A statement that there's no zero transfer can mean only that with the measuring device of our disposal, no transfer effect from our situation to other situation can be detected.

- d) **SPECIFIC TRANSFER**: Transfer effects are named as specific if they can be referred to determinate similarity relations between the element of two or more succeeding tasks.
- e) **NON-SPECIFIC TRANSFER**: This transfer is not dependent on any particular set of associated components from first to second task. On the contrary, non-specific sources of transfer are common for all different paradigms. Spread of influence from first task may take the form of subject, improve adaptation or the subject be more animated or warmed up.
- f) **VERTICAL TRANSFER**: It refers to situations in which one requires new knowledge or skills by building up more basic information or procedures in hierarchical fashion. For example, we must know alphabets to be able to read books.
- g) **CROSS EDUCATION**: It refers to many adult manual skills of transfer from one limb to another. For example, we cannot although by our non-preferred hand but what is rather frequent is that tricks acquired by one limb can also be performed to a greater or lesser extent by corresponding member on the opposite side of the body. Motor learning, however, does not travel necessarily straight across to the bilaterally symmetrical members, it may also on occasions proceed from hand to foot on the same side. This is known as homolateral transfer, thus practice of activity with particular part of the body usually facilitates performance by same activity with the other part of the body.
- h) **BILATERAL TRANSFER**: When cross education occurs from one body part to its symmetrical counterpart, we are speaking of bilateral transfer. The transfer may be from one skin area to another.

IMPORTANCE OF BILATERAL TRANSFER:

Overtly, behavioural psychology of transfer is in dilemma be conveniently produce in a laboratory. For example, the skill of a trained surgeon is more of a maze tracing task. There is a massive bilateral transfer in human maze learning in respects of the placements of the start and the goal of maze, i.e. when one has to realise the sense of direction of the correct path, keeping in mind the blind alleys and the passage through which one has to pass with proper orientation. In mirror tracing, when the person is supposed to guide his tracing movement with the help of cues in reflection, initially quite a difficult task, i.e. the mirror effects of left and right reversal, necessity of checking impulsive movements to cross ways between left and right tasks. What is important is that these are general points of methods of attacking the motor learning problem that they can be taken from one member to another. There are number of ways of measurement of transfer.

EXPERIMENTAL DESIGN:

The first subject will be asked to trace the star pattern by looking through the mirror using the non-preferred hand (in the anti-clockwise direction). Then, 20 practice trials will be given with the preferred hand in a clockwise direction and then again one last trial for the experimental condition with the non-preferred hand.

In the control condition, the second subject would be experimented upon and asked to trace the same star pattern using the non-preferred hand in the anti-clockwise direction. The time and error made will be recorded. Now, she will be given a filler activity equal to the time taken in the 20 practice trials in the experimental condition. After this, she will be again asked

to trace the same pattern with the non-preferred hand in the anti-clockwise direction as her last trial.

VARIABLES:

INDEPENDENT VARIABLE:

DEPENDENT VARIABLE: Performance of NPH in terms of errors made and time taken per trial

CONTROL VARIABLE: Subject equated with respect to age, education, gender, symmetrical movement with 2 hands in anti-clockwise direction with left hand and clockwise direction with right hand.

PRELIMINARIES:

SUBJECT 1:

NAME: Sriyanka Gangopadhyay

AGE: 18 years

EDUCATIONAL QUALIFICATION: B.A.Political Science (I) student

SUBJECT 2:

NAME: Garima Gupta

AGE: 18 years

EDUCATIONAL QUALIFICATION: B.Com.(P)(I) student

MATERIAL REQUIRED: Mirror drawing apparatus, stop watch, screen, paper, pen, koh's block design test

ARRANGEMENT OF APPARATUS:

The mirror drawing apparatus is connected to an electric socket. The screen above the star pattern should be placed in such a manner that it is not directly visible to the subjects and only its mirror image is visible. The error and time taken should be 0 at the beginning of each trial. A screen is placed between the subject and the paper in which the readings are noted down.

RAPPORT FORMATION:

The subject is made comfortable by an introduction and an informal conversation between the subject and the experimenter.

Hello, what's your name? How are you? how are your studies going on? Don't worry about the experiment. It is a simple activity. We will begin when you are prepared. Are you comfortable?

INSTRUCTIONS:

You will see a star pattern in the mirror which is connected to an error recorder. Your task is to trace the star pattern by looking through the mirror. I will indicate you the starting point and when I say start, please trace the pattern with the help of the stylus in the direction I tell you.

Once you reach the end, you will indicate by saying 'stop'. This is so because I will be recording the time taken by you to trace the entire pattern as well as the number of errors you make when you touch the walls. You will hear a tick sound indicating an error. Kindly slide the stylus through the grooves of the star pattern. Do not make to and fro movements while tracing the pattern. Any questions?

CONDUCTION:

After having read out the instructions, conduction of the experiment was soon followed. The subject (experimental group) was asked to trace the star pattern with the NPH in an anti-clockwise direction and recordings were noted that 20 practice trials were given to the subject. Now, the subject was asked to trace the star pattern again, using her NPH and accordingly recordings were noted down.

Then, the control group subject was called in. After the instructions were read out, she started tracing the star pattern with her NPH and the corresponding recordings were taken down. After this, she was given Koh's block as a filler activity for a time duration equal to the 20 practice trials. Now, she was again asked to trace the star pattern with her NPH in the anti-clockwise direction and the recordings were taken down.

PRECAUTIONS:

1. Proper lab conditions were maintained.
2. Working of the apparatus the stop watch was checked. It was made sure that the wires connecting the stylus with apparatus was insulated.
3. For each trial, the start signal was given to the subject.
4. It was made sure that she was tracing the pattern by looking in the mirror only.
5. It was only made sure she didn't lift the stylus outside the star pattern.
6. It was also made sure that she should slide the stylus by resting on the walls of the grooves.
7. No to and fro movements were allowed.

INTROSPECTIVE REPORT:

EXPERIMENTAL GROUP: I really enjoyed the experiment. I was given the instructions and was told the procedure properly before the experimenter began the experiment. She made me feel comfortable when I was nervous about the experiment. I am eagerly waiting for the result.

CONTROL GROUP: The instructions were clearly given and the experiment was conducted with ease. Initially, I found it difficult to draw the star with my left hand but I managed it well. I really liked the puzzle part of the experiment and I am waiting for my result

TABLE #1 EXPERIMENTAL DESIGN AT A GLANCE

EXPERIMENTAL CONDITION:

TRIALS	ERRORS	TIME TAKEN
NPH1		
PH1		
PH2.....PH20		
NPH2		

CONTROL CONDITION:

TRIALS	ERRORS	TIME TAKEN
NPH3		
MENTAL TASK		
NPH4		

DATA ANALYSIS:

TABLE #2 showing errors and time taken for experimental condition

TRIAL	ERRORS	TIME TAKEN
NPH1	30	.33
PH1	38	.36
PH2	35	.22
PH3	25	.24
PH4	28	.16
PH5	23	.14
PH6	24	.19
PH7	28	.17
PH8	23	.13
PH9	23	.14
PH10	21	.13
PH11	29	.14
PH12	33	.18
PH13	27	.16
PH14	29	.17
PH15	22	.16
PH16	30	.16
PH17	36	.18
PH18	21	.14
PH19	21	.16

PH20	23	.12
NPH2	70	.39

TABLE #3 showing errors and time taken for control condition

TRIALS	ERRORS	TIME TAKEN
NPH3	27	1.47
NPH4	16	1.32

TABLE #4 Analysis table for control and experimental condition

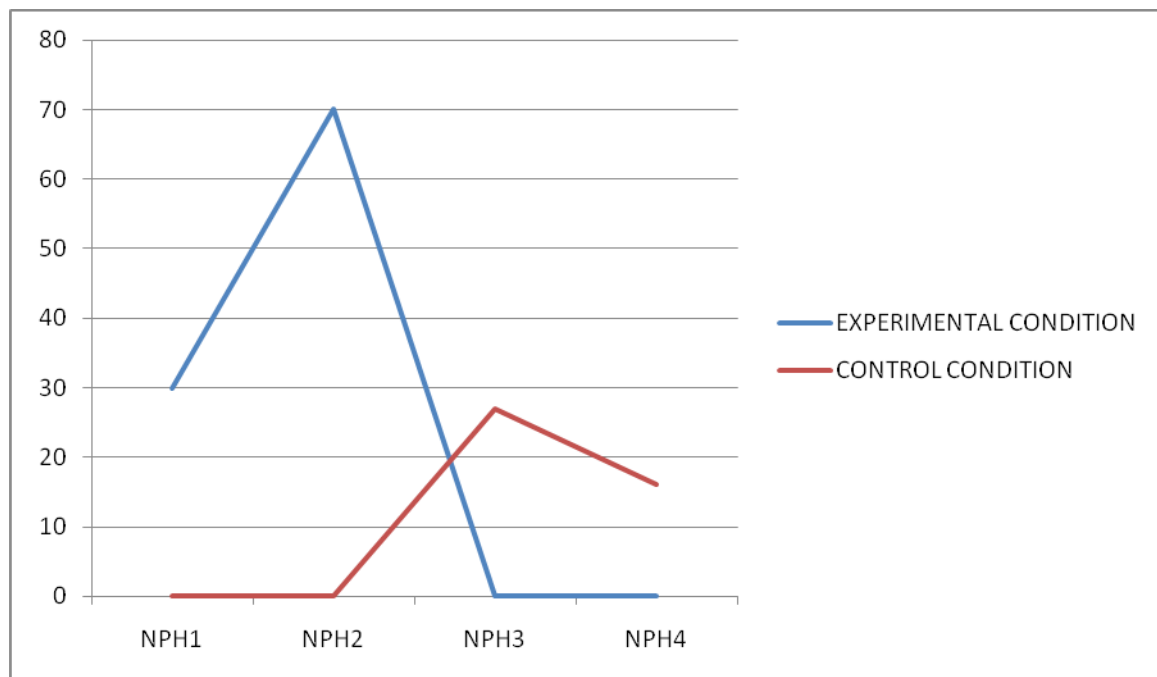
CONDITION	ERRORS	TIME TAKEN
EXPERIMENTAL CONDITION		
NPH1	30	.33
NPH2	70	.39
CONTROL CONDITION		
NPH3	27	1.47
NPH4	16	1.32
EXPERIMENTAL IMPROVEMENT	$[(30-70)/30] * 100 =$ -133.33	$[(.33-.39)/.33] * 100 =$ -18.18
$[(NPH1-NPH2)/NPH1] * 100$		
CONTROL IMPROVEMENT	$[(27-16)/27] * 100 =$ 40.74	$[(1.47-1.32)/1.47] * 100 =$ 10.204
$[(NPH3-NPH4)/NPH3] * 100$		

PERCENTAGE AMOUNT OF TRANSFER	$[(-133.33-40.74)/(-133.33)] * 100 =$	$[(-18.18-10.204)/(-18.18)] * 100 =$
$[(E-C)/E] * 100$	130.55	156.12

Table #5 showing the results

CONDITION	ERRORS	TIME TAKEN
EXPERIMENTAL CONDITION		
NPH1	30	.33
NPH2	70	.39
CONTROL CONDITION		
NPH3	27	1.47
NPH4	16	1.32
EXPERIMENTAL IMPROVEMENT	-133.33	-18.18
CONTROL IMPROVEMENT	40.74	10.204
PERCENTAGE AMOUNT OF TRANSFER	130.55	156.12

GRAPH #1 show the errors of experimental and control conditions



GRAPH #2 shows the time taken in the experimental and control conditions

