

## **Modeling & Observation Lab Motor Learning & Development**

**Name:** \_\_\_\_\_ **Score:** \_\_\_\_\_

**Introduction:** Modeling and observation learning are terms that are used interchangeably with the term demonstration. A demonstration is a means of conveying information about how to perform a skill. The following are a few examples of what researchers have found about demonstrations: 1) if an unskilled model is used as a model the demonstration must contain the essential features of the skill, 2) demonstrating shortens the time it takes to master the skill, 3) physical guidance is beneficial if it preserves the motion pattern and feel of the motor skill and 4) using a skilled model in demonstrating is a common technique used by teachers, exercise leaders, and physical therapists.

In many practical settings, movement specialists not only give learners a demonstration about the correct pattern but also use verbal instructions to supplement the demonstration. Sometimes the movement specialist just demonstrates the skills. For example, a ski instructor might show a novice skier a certain type of turn, or a tennis coach might demonstrate how to hit a ball with topspin. In other situations, videotapes are used to demonstrate that correct technique. Whether demonstrations are live or videotaped, the model demonstrates the skill are frequently accompanied by verbal instructions that direct the learners' attention to critical aspects of the goal movement pattern.

Can learning be enhanced if the instructions given in combination with model presentations direct the learner's attention to the effects of the model's or their own movements? It is probably fair to say that in many practical settings, the instructions given in conjunction with model presentations tend to direct the learners' attention to the important aspects of movement coordination. In fact, many experimental studies in which model presentations were supplemented with instructions or feedback (e.g., Weeks & Anderson, 2000) induced an internal focus. It is possible that the observation of a model is so powerful that it overshadows any effect of the type of focus no matter what instructions were given.

We have studied the constraint action hypothesis proposed by Wulf about the advantages external focus across many different types of motor and sport skills. In this lab, we will attempt to examine whether attentional focus induced instructions added onto a demonstration is important in practice and retaining performance of a motor skill.

**Purpose:** The purpose of this lab is to determine if instructions that differ slightly during a model's demonstration affected the learning of a motor maze task. Specifically, if the instructions when demonstrating that induced either a more internal or a more external focus of attention in the subject produced even more effective in learning the motor maze task than just demonstrating the skill without instructions.

**Equipment:** 6 Mirror motor maze tasks, reaction timers, mirrors, and stylists.

**Procedure:** Two experimental conditions will be formed: 1) demonstration or model only condition and 2) demonstration or model with instructions condition.

Demonstration or modeling only condition. In the demonstration only condition the subject (e.g., 1/2 of the lab) will perform on the maze 8 times. Before each trial, the subject will observe the demonstrator perform maze without any instructions. Then perform a trial on the maze until all 8 trials have been completed. The subject's time to completion for every trial will be recorded in Table I to the nearest millisecond.

Demonstration with instruction condition. The remaining members of the lab will be further divided into two groups. Each group should have the same number of participants. The instructions in each group will differ slightly. In one group the demonstration will include instructions directing the subject to focus internally. In the other group the demonstration will include instructions directing the subject to focus externally. Before each trial, the subject will observe the demonstrator perform maze with instructions. Then perform a trial on the maze until all 8 trials have been completed. The subject's time to completion for every trial will be recorded in Table I to the nearest millisecond.

To prove what conditions in lab were the best a retention test will be performed. The retention test will involve only one trial at this task. No demonstration of the skill is needed during the retention test. But you need to wait at least 10 minutes from the last practice trial to complete the retention test. Record the one trial retention test to nearest millisecond in Table 2.

Here are the specifics of performing the mirror tracing maze task. The mirror tracing maze task will be positioned in front of the subject. The subject should be positioned so they can see the maze and non-dominant hand reflected in the mirror. Position the stylus in the non-dominant hand in the starting area and begin tracking the maze while looking into the mirror. Your completion time from start to finish through the maze will be recorded. Once you have completed a trial record the time of completion to the nearest millisecond.

**Data Collection.** Record the total time of each trial to the nearest millisecond for both conditions in the Table 1 below.

**Table 1 Individual Data of Observed Student**

| Trials | Demonstration only | Demonstration with internal instructions | Demonstration with external instructions |
|--------|--------------------|--|--|
| 1      |                    |  |  |
| 2      |                    |  |  |

|      |  |      |  |
|------|--|------|--|
| 3    |  |      |  |
| 4    |  |      |  |
| 5    |  |      |  |
| 6    |  |      |  |
| 7    |  |      |  |
| 8    |  |      |  |
| Mean |  | Mean |  |

You will need to record the all students groups mean total response time for practice in the Table 2 and the each subject's retention test score in table 2, so one can compare the findings of the two conditions. No body can leave the lab until all have finished and recorded all the scores associated with this lab.

**Table 2: Practice and Retention Delay & Immediate Imitation Means**

| Subject | Demo Only | Retention Score | Demo Internally | Retention Score | Demo Externally | Retention Score |
|---------|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 1       |           |                 |                 |                 |                 |                 |
| 2       |           |                 |                 |                 |                 |                 |
| 3       |           |                 |                 |                 |                 |                 |
| 4       |           |                 |                 |                 |                 |                 |
| 5       |           |                 |                 |                 |                 |                 |
| 6       |           |                 |                 |                 |                 |                 |
| 7       |           |                 |                 |                 |                 |                 |
| 8       |           |                 |                 |                 |                 |                 |
| Mean    |           |                 |                 |                 |                 |                 |

Develop two graphs:

1) Develop one bar graph of the practice and retention means for two conditions: demonstration only and demonstration with instructions (you will to sum both the internal and external individual means to determine the overall mean of the condition with instructions).

2) Develop one bar graph of the practice and retention means for all three conditions: demonstration only, demonstration with internal instructions, and demonstration with external instructions.

Lab Questions:

- 1) Write a summary explaining graph 1 to determine if there are differences during practice and retention if instructions given with demonstrations were better than only giving a demonstration. Include data or means for support.
- 2) Write a summary explaining graph 2 to determine if there is difference during practice and retention if the type of instructions made a difference during learning or practice and in retaining the maze task performance.
- 3) Write a statement whether or not your proved or did not provide the constrain action hypothesis then provide support for your conclusion using the results in this study.