

Lab 3: Motor Program Lab

Name: _____ Date: _____

Purpose: The purpose of this lab is to demonstrate the existence of a general motor program by adopting a similar experimental procedure used in Henry and Roger's experiment (1960).

Introduction. This lab will simulate an important experiment performed by Henry and Rogers (1960). The task involved the subject responding to an external signal then executing a simple, two-response movement, or four-response movement as fast as possible. The movement of the least complexity is a simple lifting of the reaction time key. The other two responses require two and four subsequent actions. The two and four subsequent action conditions involve flipping two or four switches in a row as fast as possible.

Procedure: The subject will be seated in front of the task with their non-dominant finger on the reaction time key. The experimenter before each trial will pre-cue (tell them what will occur) the subject about which movement conditions (tasks) they will need to complete. The subject should begin each trial by holding down the reaction time key or button. A warning signal should precede the stimulus to move.

Experimenter *must randomized the order* of the tasks. You do not want the subject to complete all 10 trials for Task A then complete 10 trials for Task B and then 10 trials of Task C. Randomize the order that you want the subject to perform the tasks. Each subject will perform 10 trials per tasks.

Task A. Subject's performing task A will lift their index finger of their non-dominant hand off the key or button when the stimulus light appears as fast as possible and depress the second key to complete the trial.

Task B. Subject's performing Task B will lift their index finger of their non-dominant hand off the key or button and switch off 2 keys and then depress the second key to complete the trial. You will be told prior to each trial what 2 key in order you are to turn off.

Task C. Subject's performing Task C will lift their index finger of their non-dominant hand off the key or button and switch off 4 keys and then depress the second key or button to complete the trial. You will be told prior to each trial what 4 keys in order you are to turn off.

Results

For every trial, you are to record both the subject's reaction time and movement time in ms (e.g., 1.123 seconds of movement time is 1123 ms) on the recording form. Calculate the mean reaction time and movement time for each condition

Table 1: Individual Data for Task Complexity

Trials	Task A RT	Task A MT	Task B Order	RT	MT	Task C Order	RT	MT
1			keys 1 & 3			keys 1,3,4,2		
2			keys 1 & 4			keys 1,4,3,2		
3			keys 1 & 2			keys 2,1,4,3		
4			keys 3 & 2			keys 3,4,1,2		
5			keys 2 & 3			keys 2,4,1,3		
6			keys 3 & 4			keys 4,2,3,1		
7			keys 1 & 2			keys 1,3,2,4		
8			keys 2 & 4			keys 4,1,3,2		
9			keys 4 & 1			keys 3,1,2,4		
10			keys 4 & 2			keys 1,2,4,3		
Means			xxxxxxxx			xxxxxxxx		

Part II: Closed loop control

Purpose: Demonstrate closed loop control in performing a simple task.

Equipment: 4 bimanual coordination tasks, 4 Star tracers, counters, and clocks.

Procedures: Students will take turns in the roles of experimenter and participant. The participant's goal is to draw the star by moving the tip of the stylist in the center of the shaded path tracing the star with both hands with bimanual coordination task or with the mirror tracer task with their non-dominate hand. Movement through the star should be continuous and self-paced. Every one will complete 12 trials or tracings of the star. Begin each trial will begin with the stylist at the left point of the star. The first 2 trials (traces) will be completed clockwise. Trials 3-4, will be completed counter clockwise. Trials 5 & 6 will be completed clockwise. The trials 7 & 8 will be completed counter clockwise. Trials 9 & 10 clockwise and the last two trials will be completed counter clockwise. The experimenter will record the time of each trial and record the number errors (touches) recorded by the counter. **The participant should not be given any feedback or told their times nor the number of errors they made.** Collect all data for one participant before switching roles.

Results. Record your time to the nearest second and number of accuracy errors for each trial in the individual data Table 2 below. From your individual data sheet, calculate the mean time to nearest second and errors to nearest whole number. Record your means for counter clockwise and clockwise conditions in Table 2.

Table 2: Individual Data for Task Accuracy

	Clockwise			Counter clockwise	
Trials	Time	Accuracy	Trials	Time	Accuracy
1 CW			7 CC		
2 CW			8 CC		
3 CC			9 CW		
4 CC			10 CW		
5 CW			11 CC		
6 CW			12 CC		

CC = counter clockwise

CW = clockwise

Table 3: Table of Means Across Practice by Conditions (CC & CW)

CW Condition			CC Condition		
Trials 1 & 2			Trials 3 & 4		
Trials 5 & 6			Trials 7 & 8		
Trials 9 & 10			Trials 11 & 12		

Graph: Plot Table 3 in the space below. X-axis are conditions across trials. Y-axis is the dependent variable. If necessary, legend may be or may not be needed. Both conditions should be plotted on the same graph not 2 separate graphs. Let see if you can with solely the information above I have provided.