MOVEMENT PREPARATION LAB

Name:_____Score:_____

Activity I: Predictability of the correct response choice & Influence of Pre-cueing

Introduction: Research evidence has consistently shown that as the predictability of one of the possible choices increases, reaction time deceases. A popular way to investigate this assumption is through the pre-cuing technique. Pre-cuing technique is where the researcher provide the participant with differing amounts of advanced information about which movement must be made in a choice situation. Prior to the signal to move, the subject receives advance information (the pre-cue) specifying the correct upcoming response. Researchers using the pre-cue technique have indicated that correct advanced information given to the subject prior to the "go" signal improves their preparation time.

An interesting twist to the pre-cue situation occurs when the advanced information may or may not be correct. The critical factor influencing the preparation time in this situation is the probability of the advance information correctness. It has been determined that subjects who are in a two choice situation (the advanced information has only a 50-50 chance of being correct), the subject will ignore the information and respond as if no advanced information has been given. But if the advanced information has an 80 percent chance of being correct or wrong, the performer will bias his or her preparation in making a response.

The purpose of this experiment is to determine what happens to the subject's response time when the advance information given to the learner is wrong just before the correct information is presented.

Procedure: Members of the lab will be divided into groups consisting of 3-4 students. Using the choice reaction timer, a two choice situation has been developed where the subject will depress one of two buttons associated with a lighted button. The researcher, a member of your group, will provide advanced information (pre-cue information) about which button corresponding to color of the light that should be pressed prior to the signal.

Each subject will perform under three pre-cue conditions: 1) where the pre-cue was correct only 20 percent of the trials, 2) where the pre-cue was correct 50 percent of the time, and 3) where the pre-cue was correct 80 percent of the time. Each subject in your group will perform 30 trials; ten trials under each pre-cue condition. Trials 1-10 will be the 50-50 condition, trials 11-20 will be 80-20 correct-wrong condition, and trials 21-30 will be 20-80 correct-wrong condition.

In the 50-50 pre-cue condition, 5 pre-cues of the 10 trials need to be correct. In the 80-20 chance condition, 8 pre-cues out of the 10 trials will be correct. In the 20-80 chance condition, 2 pre-cues out of the 10 trials will be correct. Make sure you randomize the number of correct and incorrect pre-cues. Record all the subject's reaction times on the data form provided in ms.

Results: Record your reaction time scores on Subject Data Form of Table 1. Record the reaction time in ms(i.e., 234). Calculate the mean reaction times for only the correct pre-cue trials for each conditions.

Table 1 Subject Data

Subject Data Form: (Remember to randomize the correct trials and calculate means for only the correct trials.)

Trials	50 (W)-50 (C) Condition	Trials	80 (W)-20 (C) Condition	Trials	20 (W) – 80 (C) Condition
01		01		01	
02		02		02	
03		03		03	
04		04		04	
05		05		05	
06		06		06	
07		07		07	
08		08		08	
09		09		09	
10		10		10	
Mean for C		Mean for C		Mean for C	

Graphing: Develop a bar graph of the overall subject data mean reaction times for each condition. Create your own title but make sure our label the x and y axis. Place the mean above each bar. Realize in excell that a bar graph is really a column graph. Attach your graph to the back of this lab.

Activity II: Foreperiod

Introduction: A part of the preparation process begins when a person detects a signal indicating that the signal to respond will occur shortly. The interval between this warning signal and the stimulus or go signal is known as the foreperiod. In a simple reaction time (RT) situation the regularity of the length of this interval influences RT. If the foreperiod is a constant length, i.e., the same amount of time for every trial, RT will be faster than the amount of time that typically characterizes simple RT. If the foreperiod is not a constant length, i.e., a different amount of time for every trial, RT will be slower than the amount of time that typically characterizes simple RT.

A typical reaction time situation is where the performer knows before the warning signal what response will be required. And because he or she knows when the signal will occur after the warning signal, the person can prepare the required action in advance of the go signal and have a faster reaction time.

Purpose: The purpose of this lab is to determine what would happen to subject's reaction time if the length of foreperiod would vary.

Procedure: You will need a lab partner to complete this lab. Each lab member will complete 30 trials with 15 trials in low uncertainity (constant) and high uncertainty (random) conditions. You will be seated at the reaction time apparatus. The index finger of the preferred hand will depress the key used for responding. A visual stimulus will be used in the experiment. To initiate a trial, the experimenter will initiate a warning light followed by colored light. The time period between the warning light and the colored light in the constant condition will always be the same (2 seconds). The time period between the warning light and the colored light in the varied condition will be varied (0, 1, 2, 3, or 4 seconds).

Data Collection: The average reaction time for the low-uncertainty condition (constant for foreperiod) and high-uncertainty condition (varied foreperiod) will be calculated for each subject. Record your reaction time scores on Table 2 Subject Data Form. Calculate and record the mean reaction for each condition. You will use these means for graphing.

Table 2 Subject Data Form

Trials	Foreperiod :Low Uncertainty (Constant)	RT	Foreperiod: Uncertainty (Random)	RT
01	2 sec			
02	2			
03	2			
04	2			
05	2			
06	2			
07	2			
08	2			
09	2			
10	2			
11	2			
12	2			
13	2			
14	2			
15	2			
Mean	xxxx			

Graphing: Develop a bar graph of the overall mean reaction times for each condition. Create your own title but make sure our label the x and y axis. Place the mean above each bar. Realize in excell that a bar graph is really a column graph. Attach the graph to this lab.

Activity III: Sensory set versus motor set.

Purpose: The lab will attempt to answer which condition produces a faster reaction time, concentrating on the sensory set (i.e., sound or vision start signal) or on the motor set (i.e., one's movement)?

Procedure: You will be sit in front of a simple reaction timer and attempt to release your forefinger off the depressed button as fast as possible. In sensory set condition you will direct your attention to releasing the button when you hear a buzzing sound. In the motor set condition, you will direct your attention to moving your finger off the button as fast as you can once you hear the buzzing sound. The key in this activity is where you direct your attention to the sound or movement of the finger.

The experimenter must inform you before each trial on whether you should concentrate on the sound (sensory set) or movement (motor set). The experimenter must randomize the presentation of a sensory or motor set across 20 trials where 10 trials of each condition are presented.. In Table 3 below in the column under condition the experimenter should indicate their randomization schedule of conditions. Record the subject's reaction time for each trial in Msec then calculate the overall mean reaction for each condition.

Table 3 Subject Data

Trial	Condtion	RT	Trial	Condition	RT
01			11		
02			12		
03			13		
04			14		
05			15		
06			16		
07			17		
08			18		
09			19		
10			20		

Calculate a mean for the sensory and motor set trials then record the means in Table 4.

Table 4

Sensory Set	
Motor Set	

Graphing: Develop a bar graph of the sensory and motor set means in Table 4. Create your own title but make sure you label x and y. Place the means above the each bar. Attach the graph to this lab.

Lab questions

1. The cost-benefit trade-off is where subjects in the 50-50 chance of the pre-cue's being correct should not be influenced by the false pre-cues. The 50-50 conditions is the considered to be the control condition. But in 80-20 or 20-80 conditions, subjects responses could revealed bais, that is, they are different from the 50-50 condition. In the 80-20 precue condition, there may be a benefit; the subject's reaction time should be faster than the 50-50 condition. In the 20-80 pre-cue condition (80 percent of trials the researcher gave the wrong information), there was a cost, the subject reaction time should be slower than it was in the 50-50 condition. Obviously, we determine if there is a cost-benefit trade by comparing the 80-20 or 20-80 conditions mean reaction times to the50-50 chance conditions mean reaction times. Did your means plotted on the graph support or not support a cost-benefit trade off indicated by Larish & Stelmach found on pages 173-4 of your text?

2. Did your data support or not support the foreperiod conclusions stated in the text on pages 175-6 of the text? Explain your answer using your data and/or graph to answer this question.

3.Let's say I am a defensive lineman on a third down play where the opponent must go 20 yards for the first down or 25 yard for touch down. The quarterback has become very consistent in his hut count and snap of the ball. What do you think might happen to my rush of the quarterback on this obvious throwing play? Explain your answer based on what you know about foreperiod regularity found on pages 175-6 of your text.

4. Magill discusses sensory versus motor set on pages 180-1 in the text. Does your results support or not support the Henry (1960) or Longsma et al (1987) studies results about sensory versus motor set? Do not just say "yes" or "no". Discuss your results using your means or graph when supporting or not supporting their results then provide a reason(s) why you did or did not support their results.