**Unit 3 Human Biological Science**

**Science Inquiry 1 – Nervous System**

**(The Brain - Discrimination)**

**Science Inquiry and Nervous System**

**Plus In-class Validation Task (38 marks) worth 5%**

**GROUP NAMES (PAIRED) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Section 1 Difficulty and Efficiency (PAIRED TASK)**

**INTRODUCTION:**

The degree of difficulty in performing a task must be directly related to the speed at which it is performed. The problem of discrimination is used in the exercise to make the task – that of dealing cards accurately – more difficult

**PURPOSE:**

To investigate the effect of discrimination on reaction time

**MATERIALS:**

Deck of playing cards

Stop watch/Timer

**PROCEDURE:**

* One member of each pair is the ***subject***who will perform the tasks: the other is the ***observer***. After the subject has completed the series of tasks, he then changes roles with the observer.
* Cards must be thoroughly shuffled by the observer before each task. Shuffling technique - split cards into 8 piles and then shuffle deck 20X before next trial
* Playing technique – turn card from face down to face up toward you from the pile while holding the pile in your non-preferred hand before playing the card onto the pile
* Record results in table provided.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Name | Time taken (Sec) | | | | |
| Task A | Task B | Task C | Task D | Task E |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

Task A: The subject deals all cards singly into one pile, face up, as quickly as possible. The observer notes and records the time taken.

Task B: Shuffle

The subject deals all cards singly into **two** piles, one containing the red suits, the other containing the black suits. The observer notes and records the time taken.

Task C: Shuffle

The subject deals all cards singly into **four** piles, each containing one suit. The observer notes and records the time taken.

Task D: Shuffle

The subject deals all cards singly into **four** piles, each containing one suit, and the even numbers in all suits turned face downwards. The observer notes and records the time taken.

Task E: Shuffle

The subject deals all cards singly into **four** piles, each containing one suit, and the even numbers of all the black suits only are turned face downwards. The observer notes and records the time taken.

Switch roles and repeat the above.

**Section 2 Difficulty and Efficiency (Discrimination)**

1. What is noticeable about the times taken to perform each of the tasks listed?
2. Calculate the time taken to make the decision between red or black suit for each card?

NOTE: (i) There are 52 cards dealt (40 if you removed the jacks, queens and kings).

(ii) The time taken to perform the physical task of just dealing the cards must be considered.

(iii) This time is referred to as the discrimination time between black and red.

1. Complete the table below showing your discrimination time for all tasks.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Discrimination Times (sec) | | | |
| Red/ Black  (B – A) | Suits  (C – A) | Odd/Even  (D – A) | Black/Even  (E – A) |
|  |  |  |  |  |
|  |  |  |  |  |

**Section 3 Class Results Table and Graph**

Construct a whole class set of results on the spreadsheet provided. Then construct a line graph showing your discrimination times compared to the total time results of the whole class.

**Section 4 Discussion Questions**

Compare the discrimination times and the total time results of the whole class.

1. Are there any noticeable trends in the results which suggests that some part of the class is better at performing the tasks in this exercise? Explain.
2. Are there any noticeable outliers?
3. Relate the total time taken to perform the tasks with the probable number of neural processes which are involved.

The validation test will be on **Thursday 17th March.** You need to study Chapters 1 (in relation to the components of a Science Inquiry Investigation), and 3 to prepare for this validation test.