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# A Comparative Study Of The Effect Of Gender On Simple Reaction Time In Young Adults

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*ABSTRACT*- - Reaction time refers to the duration between presentation of a sensory stimulus to the elicitation of an appropriate response and is a reflection of ones mental faculties. This study was done to assess the differences between the simple reaction time of the 2 genders. Using the PC-1000 reaction time apparatus 48 males and 49 females reaction times were measured.The mean visual and auditory reaction time in males was found to be195ms and 150ms and that of females was 199ms and 156ms. Taking a p-value of <0.05 as significant the data was compared between the 2 groups using unpaired t-test. Hence we concluded that there was no significant difference between the reaction times of the 2 groups.

## I INTRODUCTION

Reaction time is a term coined by Austrian Physiologist Sigmund Exner and can be defined as "The time elapsed between the presentation of a sensory stimulus to the eliciting of an appropriate response." It is indicative of the integration of sensory and motor components of the nervous system.

Stimulus → Sensory Neuron → Spinal Cord or Brain → Motor Neuron → Response

The faster you react the shorter is your reaction time and the slower you react the longer is your reaction time.

There are different types of reaction times. Simple reaction time is where there is one reaction for one stimulus. Recognition reaction time involves one response to a particular set of stimuli and not for others and Choice reaction time involves different responses for different stimuli.

Various studies have been conducted on reaction time in males and females with conflicting results. some stating that males have a shorter reaction time than females while others stating the opposite while some papers show no difference between the 2 groups.

Objective:

The purpose of this paper is to compare the simple reaction time of females with males.

Design And Methodology:

Source of the data

Healthy young adults between the ages of 18-24 years

Exclusion criteria

1. Subjects who consumed alcohol, smoke or stimulants like caffeine or drugs
2. Patients of psychological disorders or on any medication
3. Known cases of thyroid disorders, diabetes, epilepsy
4. Patients with uncorrected visual or auditory impairments
5. Musculoskeletal injuries or conditions that impair mobility

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6. Subjects who did not sleep adequately (7 hoursof sleep ) or suffer from sleep disorders

## II MATERIALS AND METHODS:

After obtaining clearance from the institutes ethical committee 48 male and 49 female subjects in the age group of 18-24 years satisfying the inclusion and exclusion criteria were recruited for the study. The study was conducted in the Physiology department of Raja Rajeswari Medical College and Hospital. The data was collected between 9:00 am to 11:00 am. The procedure was explained to the subjects in advance and informed consent was taken.

The subjects were advised to have adequate sleep on the previous night on the day of recording (at least 7 hours). A trial run was carried out to familiarize the subjects with the procedure. Simple reaction time was recorded on the subjects and their dominant hand employed throughout the procedure. The stimuli were given at random intervals. The instrument used was the in house built PC-1000 reaction time apparatus connected to a laptop and the data was recorded using the Audacity software.

## III STATISTICAL PLAN FOR DATA ANALYSIS:

Descriptive statistics were used to express the data.Statistical analysis was done using unpaired "t"-test. A p-value of <0.05 was taken as a significant. The software used was the Microsoft excel 2010.

## IV OBSERVATIONS:

The mean visual reaction time of the male and female subjects

| | Males | Females | P value |
|---|---|---|---|
| Mean Visual reaction time | 195 msec | 199 msec | 0.457 |
| Mean Auditory reaction time | 150 msec | 156 msec | 0.237 |

## V CONCLUSION

The male subjects were found to be faster with respect to the female subjects but on statistical analysis by students t-test it was found that there was a no significant difference between the two groups. Hence gender does not have any significant influence on reaction time.

## VI DISCUSSION

Reaction time is altered by many different mechanisms like nicotine consumption in the form of smoking or dipping tobacco or caffeine all of which has been found to decrease reaction time.[1,2,3]. Alcohol consumption was found to increase reaction time[4].Increasing age has been shown to have a direct relationship to reaction time possibly due to the effect of age on myelination of neurons.[5,6,7] Patients of thyroid disorders both hypothyroidism and hyperthyroidism show increases reaction time[8].In both the genders the auditory reaction time was found to be faster than the visual reaction time this can be attributed to auditory stimuli reach the cortex faster than visual stimuli[9].

Many studies have been conducted on gender differences and reaction time showing conflicting results.

Ervilha et al in a study on taekwondo players had found that females had faster reaction times than

males attributing their length (build) as a cause for the difference in reaction time.[10]

However many studies done on reaction time had shown that males had a shorter reaction time compared to females[11,12,13,14] attributing this to many factors like the fluctuating levels of sex steroids that have an effect on the fluid and electrolyte balance that in turn had an effect on the axonal neuronal conduction[15].Adam et al attributed it to differences in the processing of information that is hard wired in the genders[16].Badwe et al attributed this to increased muscle mass in the males and also that the processing time by the CNS is dependent on the subjects behavior[13].

This study has shown that there is no significant difference between the reaction times in males and females which is similar to the results shown by Ahmed A Telebet al[17].

Reaction times are dependent on many factors like age, height, build, level of training, stimulants, and many more.

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