



COMPARATIVE STUDY OF REACTION TIME BETWEEN GOVERNMENT AND PRIVATE SCHOOL STUDENTS OF URBAN AND RURAL AREA

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ABSTRACT :

The purpose of the study was to investigate the significant differences of Audio and visual reaction time variables between government and private school students of urban and rural area. Total 80 male students (20 from rural area government school + 20 from rural area private school + 20 from urban area government school + 20 from urban area private school) from Patiala and Fatehgarh Sahib districts of Punjab state (India) were selected for this study. The age of the subjects was ranged from 10-12. For the purpose of this study, descriptive statistics and one-way ANOVA was calculated by SPSS software.

The results revealed that that Rural Government School Students have better Audio and visual Reaction time (ART; Mean; .82, SD .21 and VRT; Mean; .51, SD .14) than Urban Private school (ART; Mean: 1.15, SD .41 and VRT; Mean; .75, SD .35), Urban government school (Mean; ART 1.21, SD .27 and VRT; Mean; .60, SD .16), and Rural Private school students (Mean; ART .86, SD .27 and VRT; Mean; .54, SD .14).



KEYWORDS : Audio Reaction Time, Visual Reaction Time.

INTRODUCTION :

Reaction is a purposeful voluntary response to external stimulus. There is certain time period between application of stimulus and appropriate motor response. Reaction time is one of the important methods to study a person's central information processing speed and coordinated peripheral movement response. Reaction is a purposeful voluntary response to an external stimulus. There is certain time period between application of external stimulus and appropriate motor response to the stimulus called the reaction time. Reaction time is defined as interval of time between presentation of stimulus and appearance of appropriate voluntary response in a subject. It is usually expressed in milliseconds. It reflects the speed of the flow of neurophysiological, cognitive, and information processes which are created by the action of stimulus on the person's sensory system. The receipt of information, its processing, decision making, and giving the response or execution of the motor act are the processes which follow one another and make what we call the reaction time. Reaction time is defined as interval of time between presentation of stimulus and appearance of appropriate voluntary response in a subject. Our emotions, attention, memories these and all added reaction we make are responses to stimuli which play upon us (Joseph et al., 1946). Audio-Visual reaction time is the speed, with which a person can respond to an auditory stimulus and visual stimulus respectively (Luchies et al., 2002). Reaction time plays a role in the majority of our day-to-day

activities. Our ability to interact with our surroundings and react to unexpected changes and events depends directly on this cognitive skill. Being able to evaluate reaction time and understand how it functions could be very helpful in a variety of situations and areas. For example, academics, as it allows teachers or parents to understand if the child has perception, processing, or motor problems and the academic repercussions this may have, medical, as it can help detect mild problems in patients with perceptive, processing, or motor areas, or in the professional field, where it makes it possible for workers to know and understand if they are best prepared to carry out certain activities that may require them to act quickly in certain circumstances. An animal's ability to cope with the environmental changes for the maintenance of homeostasis depends on the integrity of cell communication and responses given by the various systems in terms of sensory perception and motor response. I had the false notion that Physical education had nothing to do with education. Today I know that Physical training should have as much place in the curriculum as mental training. (MK Gandhi 1927).

METHODOLOGY

The purpose of this study was to find out the difference in audio and visual reaction time between government and private school students of rural and urban areas. For this purpose, Total 80 male students (20 from rural area government school + 20 from rural area private school + 20 from urban area government school + 20 from urban area private school) from Patiala and Fatehgarh Sahib districts of Punjab state (India). The age of subjects was ranged from 10-12 years. Audio Visual reaction timer operator was used to measure subjects audio and visual reaction time. It had a display accuracy of 0.001 sec. The instrument is specially designed to measure response time in milliseconds. It had two modes of providing stimulus- Audio and visual. As soon as the stimuli was perceived by the subject, they responded by pressing the response switch. The display indicated the response time in milliseconds. After familiarising the subject with the instrument and after repeated practice, three readings for each parameter were noted. The interval between the stimuli was randomly varied from 2-5 seconds. The least reading of three was taken as the value for reaction time task and was noted in the subject's record profile. Audio Visual reaction timer operator was taken from Physical education Department of Punjabi University Patiala. Before starting collection of data permission was taken from concerned school Head master/Principal. All the instructions were given to all the subjects very carefully. Before recording their final data one practice trial was given to all. It was assured to all the participants that their data will be used for study purpose only.



Audio Visual Reaction Timer Operator

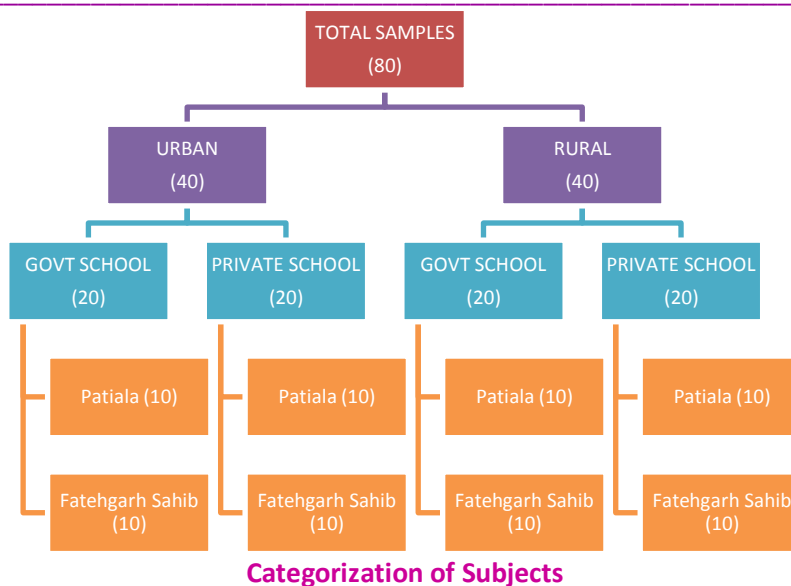


Table 1
List of Variables

Variable	Test	Apparatus
Audio Reaction Time	Audio Reaction Time	Audio Visual Reaction Timer Operator
VisualReaction Time	VisualReaction Time	Audio Visual Reaction Timer Operator

Statistical Analysis

For the purpose of the study, descriptive statistics and one way ANOVA statistical technique was applied with the help of SPSS software. Further Post Hoc test (LSD) was used to find the significant difference between groups. The level of significance was set at 0.05 level.

RESULTS AND FINDINGS

Different types of descriptive statistics such as mean and standard deviation was computed to describe each variable statistically. Its results have been depicted in the following tables.

Table No 2
Descriptive statistics for the data of Audio Reaction Ability

	N	Mean	Standard Deviation
UGS	20	1.21	.27
UPS	20	1.15	.41
RGS	20	.82	.21
RPS	20	.86	.27
Total	80	1.01	.34

(UGS- Urban Government School, UPS- Urban Private School, RGS- Rural Government school, RPS- Rural Private School)

Table No. 2 shows that the mean of the data of Rural Government School students is .82 and SD is .21, Mean of the data of Urban Private school students is 1.15 and SD .41, mean of the data of Urban Government School students is 1.21 and SD is .27 and Mean of the data of Rural Private school students is .86 and SD is .27.

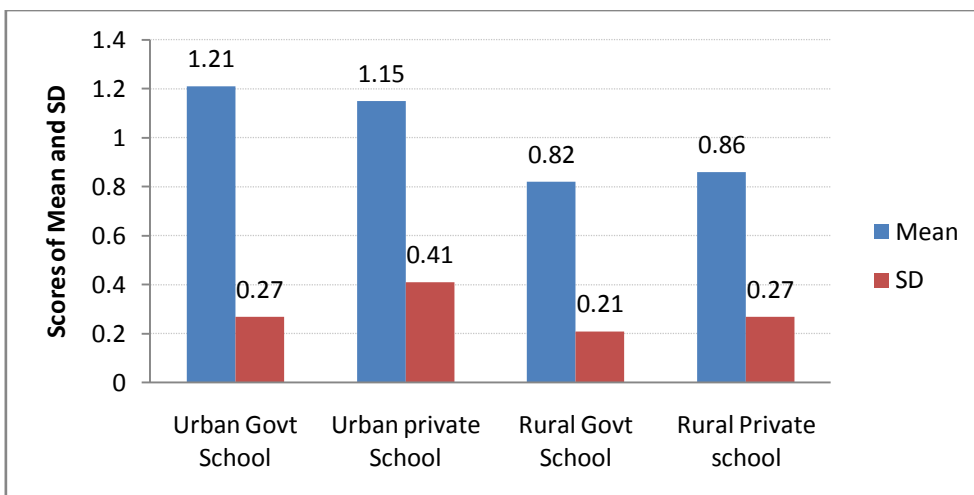


Figure No. 1 Graphical representation of Audio Reaction Ability

Table 3
ANOVA Table for Audio Reaction Ability

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2.43	3	.81	9.23	.000028
Within Groups	6.67	76	.09		
Total	9.12	79			

Table No. 3 reveals that the F-value is significant at 5% level of significance which shows that there exists a statistical significant difference between UGS, UPS, RGS and RPS students in their Audio Reaction Ability.

Table No. 4
Pair wise comparison of Audio Reaction Ability between Groups

(I) group	(J) group	Mean Difference (I-J)	Std. Error	Sig.
RGS	UPS	-.33900*	.09379	.001
	UGS	-.39650*	.09379	.000
	RPS	-.04550	.09379	.629
UPS	RGS	.33900*	.09379	.001
	UGS	-.05750	.09379	.542
	RPS	.29350*	.09379	.002
UGS	RGS	.39650*	.09379	.000
	UPS	.05750	.09379	.542
	RPS	.35100*	.09379	.000

(UGS- Urban Government School, UPS- Urban Private School, RGS- Rural Government school, RPS- Rural Private School)
*- Highly Significant

It can be observed from table 4 that the difference between Rural Government School students and Urban Private school students is significant at 5% level as well as 1% level because the p value for this mean difference is .001 which is less than .05 and .01. Mean difference between Rural Government School students and Urban Government school students is significant at 5% level as well as 1% level because the p value for this mean difference is .000 which is less than .05 and .01. Mean difference between Rural Government School students and Rural Private school students is not significant at 5% level because the p value for this mean difference is .629 which is more than .05. Meandifference between Urban Private School students and Urban Government school students is not significant at 5% level because the p value for this mean difference is .542 which is more than .05. Meandifference between Urban Private School students and Rural Private school students is significant at 5% level as well as 1% level because the p value for this mean difference is .002 which is less than .05 and .01. Meandifference between Urban Government School students and Rural Private school students is significant at 5% level as well as 1% level because the p value for this mean difference is .000 which is less than .05 and .01.

As table 2 depicts clear picture that Rural Government School students have better Audio reaction time than Urban Private school, Urban government school and Rural Private school students. Rural private school students have good audio reaction time than Urban Private School and Urban Government School Students.

Table No. 5
Descriptive statistics for the data of Visual Reaction Ability

	N	Mean	Std. Deviation
UGS	20	.60	.16
UPS	20	.75	.35
RGS	20	.51	.14
RPS	20	.54	.14
Total	80	.60	.23

(UGS- Urban Government School, UPS- Urban Private School, RGS- Rural Government School, RPS- Rural Private School)

Table No. 5 shows that the mean of the data of Rural Government School students is .51 and SD is .14, Mean of the data of Urban Private school students is .75 and SD .35, mean of the data of Urban Government School students is .60 and SD is .16 and Mean of the data of Rural Private school students is .54 and SD is .14.

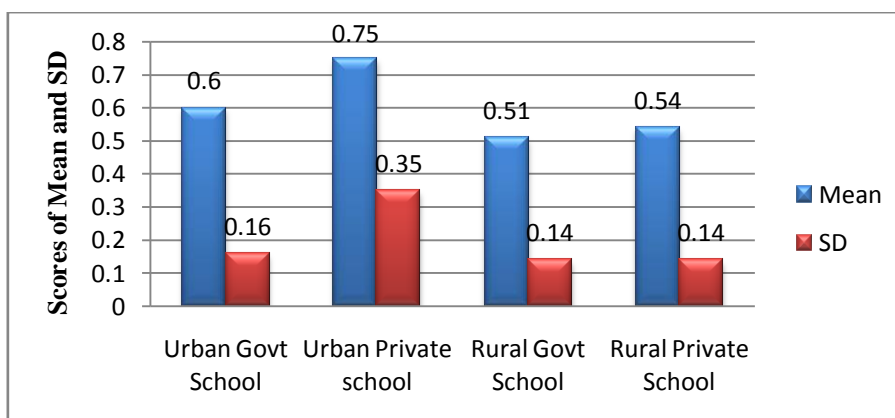


Figure No. 2 Graphical representation of Descriptive statistics

Table No. 6
ANOVA Table for Visual Reaction Ability

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.66	3	.22	4.77	.004
Within Groups	3.50	76	.046		
Total	4.16	79			

Table No. 6 reveals that the F-value is significant at 0.05 level of significance which shows that there exists a statistical significant difference between UGS, UPS, RGS and RPS students in their Visual Reaction Ability.

Table No. 7
Pair wise comparison of Visual Reaction Ability between Groups

(I) group	(J) group	Mean Difference (I-J)	Std. Error	Sig.
RGS	UPS	-.23700*	.06783	.001
	UGS	-.08550	.06783	.211
	RPS	-.03350	.06783	.623
UPS	RGS	.23700*	.06783	.001
	UGS	.15150*	.06783	.028
	RPS	.20350*	.06783	.004
UGS	RGS	.08550	.06783	.211
	UPS	-.15150*	.06783	.028
	RPS	.05200	.06783	.446

(UGS- Urban Government School, UPS- Urban Private School, RGS- Rural Government School, RPS- Rural Private School)
*- Highly Significant

It can be observed from table No. 7 that the difference between Rural Government School students and Urban Private school students is significant at 5% level as well as 1% level because the p value for this mean difference is .001 which is less than .05 and .01. Mean difference between Rural Government School students and Urban Government school students is not significant at 5% level because the p value for this mean difference is .211 which is more than .05. Mean difference between Rural Government School students and Rural Private school students is not significant at 5% level because the p value for this mean difference is .623 which is more than .05. Meandifference between Urban Private School students and Urban Government school students is significant at 5% level because the p value for this mean difference is .028 which is less than .05. Meandifference between Urban Private School students and Rural Private school students is significant at 5% as well as 1% level because the p value for this mean difference is .004 which is less than .05 and .01. Meandifference between Urban Government School students and Rural Private school students is not significant at 5% level because the p value for this mean difference is .446 which is more than .05.

As table No. 5 reveals clear picture that Rural Government School students have better Visual reaction time than Urban Private School, Urban government school and Rural Private school students. Rural private school students have good audio reaction time than Urban Private School and Urban Government School Students.

DISCUSSION

The findings of the study showed that the Rural Government School going male students were significantly better in audio and visual reaction ability compared to urban Government school students, urban private school students and Rural Private school students. Pophali, N. P (2018) concluded that the auditory and visual simple reaction ability of rural school going children was significantly better than urban school going children, may be due to the fact that the students belonging to rural area performs various extra activities walk to school, market, various type of play, regular physical activity whereas the lifestyle of urban students are more comfortable, better transportation and lack of physical activity.

CONCLUSION

The results of the study conclude that rural government schoolgoing male students have better audio and visual reaction ability.

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