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DOES SHYNESS AFFECT REACTION TIME?

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ABSTRACT

This study attempts to answer the question 'does shyness really affects reaction time?' In the present study, Crozier's (1995) shyness scale was employed to measure the level of shyness. Reaction times both for sound and light in simple and discrimination conditions were measured through digital reaction time apparatus. A total of 358 (266 boys and 92 girls) college students served as subjects for the present study. Results revealed that shyness was not related to reaction times both for sound and light in simple and discrimination conditions indicating that shyness is independent of reaction time and it does not affect reaction time of the individuals.

Key Words: Shyness, Social phobia, Simple reaction time, Discrimination reaction time.

Introduction

Shyness is conceptualized as a syndrome of affective, cognitive, and behavioral components characterized by social anxiety and behavioral inhibition resulting from the feeling that others are evaluating. The affective component of shyness reflects the anxiety, muscle tension, increased heart rate, upset stomach, and an assortment of other psycho-physiological reactions experienced by shy people. The

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cognitive component of shyness reflects the excessive sense of self, negative self-appraisal, irrational belief system characteristic of the way that shy people think about themselves. The behavioral component of shyness is expressed by behavioral inhibition. Thus, shyness is not just one or two symptoms but an all-encompassing collection of characteristics that manifests itself in the mind, body, and behavior of shy people. Among students who are (compared to their peers) inactive in the classroom, many may be well adjusted academically and socially, but relatively quiet and content to work independently. In addition, research suggests that shy children participate in verbal interaction infrequently and exhibit poor communicative competence; and that quiet less talkative children are viewed as less approachable by peers, less socially competent and less desirable social partners (Evans, 1993). A common observation in shyness research is that the consequences of shyness are deeply troubling. A study on high school students by D'Souza, Urs and James (2000) revealed that students with more shyness are prone to neurotic tendency and it will have negative effects such as having low academic performance, which in turn further complicates the personality of the student. Higher the shyness more was the maladjustment in social and emotional adjustment of the high school students (D'Souza & Urs, 2001). D'Souza, Urs & Ramaswamy (2002-03) reported that even self-esteem is negatively influenced by shyness. Clinical and applied developmental psychologists have long suggested that extremely shy and withdrawn children may be at 'risk' for later difficulties (Caspi, Elder & Bem, 1988).

Shyness has been linked to factors related to genetics, physiology and inheritance. Much like other psychological traits or disorders such as schizophrenia and mood disorders; having a history of shyness in the family, increases the likelihood that the offspring will be shy as well. Biological factors involved in shyness include a high arousal tendency of portions of the limbic system. The sympathetic nervous system is a component of the autonomic nervous system, which is responsible for arousing the body and mobilizing its energy in situations of stress. In shy individuals, the sympathetic nervous system is more sensitive, and thereby prone to causing discomfort to the individual in situations where others with less sensitive sympathetic nervous systems would not feel as anxious. The sympathetic nervous system when aroused triggers an increase in heartbeat rate and skin conductance. These are two biological markers of people who feel shy in social situations (Henderson and Zimbardo, 1996). Shy children also have been shown to have more brain wave activity in the right frontal lobe of the brain, as opposed to non-reticent children who present more brain wave activity in the left frontal lobe. The right side of the brain has been shown by research to be related to anxiety emotions. Also, they found that inhibited children and suggested limbic system of the brain becomes aroused more in children who are shy than in those who are not.

From the preceding discussion it is evident that nervous system too does play an important role in the etiology of shyness, it was hypothesized that shy individuals would be more reactive in terms of reaction time for visual and sound stimuli compared to non-shy individuals and the present study was taken up to find out the answer 'does shyness affects reaction time?"

Method

Sample

A total of 358 (266 boys and 92 girls) college students served as subjects for the present study. The sample was selected from the B.A., B.Sc. and B.Com. combinations of Maharaja's College, Yuvaraja's College and D Banumaiah's College of Mysore city. The students were selected both from English and Kannada mediums. Stratified Random sampling technique was used to select the sample. Their age varied from 18 to 25 years.

Research Tools

Shyness Questionnaire

This questionnaire was developed by Crozier (1995) of University College of Cardiff. It consists of 26 items and require the subject to indicate his/her response by ticking 'YES', 'NO' or 'DON'T KNOW'. The items of the questionnaire are based on situations or interactions like performing in front of the class, being made fun of, being told off, having one's photograph taken, novel situations involving teachers, school-friends interaction and so on. Of the 26 items, shyness is indicated by a 'YES' response for 21 items and a 'NO' response for 5 items. Item analysis of the scale using SPSS program resulted in Cronbach's alpha coefficient of 0.817. For the shyness questionnaire, items worded in the direction of shyness, responses were scored 2 for 'YES', 1 for 'DON'T KNOW', and 0 for 'NO'. Scores were reversed for the items worded in the opposite direction.

Reaction Time

Digital reaction apparatus measured the reaction times in milliseconds (1/1000 sec) of the subjects for light and sound stimulus for simple and discrimination conditions. In total there were four conditions - 1. simple reaction time for sound, 2. simple reaction time for light. 3. discrimination reaction time for sound and 4. discrimination reaction time for light. For each condition 15 trials were presented and mean RT was taken for last 10 trials of each condition.

Procedure

In the first session, rapport was established with the subjects and they were asked to introduce themselves. The purpose of the study was made clear to them. Then they were administered the Shyness questionnaire. They were given appropriate instructions and the questionnaires were read out to them. They were asked to indicate their responses in the respective sheets given to them. Whenever they had doubt in understanding questions, the test administrator made those questions very clear to them in their local language.

In the second session, reaction times for different stimuli and conditions were measured. Using the standardized procedure given in the manual (Nataraj, 2003), each subject was introduced of RT apparatus and proper instructions were given to him/her about the placement of fingers in both simple and discrimination conditions. Care was taken to avoid pre mature reactions as much as possible. In each condition 15 trials were presented, and the first 5 trials in each condition were considered as practice trials and average of last 10 trials were taken separately for simple reaction time for sound, simple reaction time for light, discrimination reaction time for sound and discrimination reaction time for light.

Statistical Analysis

Shyness scores were graded into 3 categories (low, medium and high) and one-way Analysis of variance was applied to find out the difference between various levels of shyness in average reaction time for simple reaction time for sound, simple reaction time for light, discrimination reaction time for sound and discrimination reaction time for light using the software SPSS for Windows (Version 10.0).

Results and Discussion

Table 1 presents mean reaction times for various conditions for students with different levels of shyness and results of one-way ANOVA. The F values obtained through one-way ANOVA revealed non-significant differences among low, medium and high levels of shyness, as all the F values were failed to reach significant level criterion (.05 or .01 level) for all the conditions like simple reaction time for sound, simple reaction time for light, discrimination reaction time for sound and discrimination reaction time for light.

There are hardly any studies found in the literature regarding shyness and reaction time. Even a thorough search in CD-Rom, text books, Internet etc., did not yield any results on shyness and reaction time. Even though studies have indicated involvement of nervous system in shyness in arousing anxiety and other emotions,

Table 1. Mean reaction times (in milliseconds) for various conditions for students with different levels of shyness and results of one-way ANOVA.

Conditions	Shyness Level	Reaction Time		F value	Significance
		Mean	S.D		
Simple RT for Sound (m sec)	Low	172.0927	23.6084	2.031	.133
	Medium	174.0358	23.4216		
	High	167.7298	26.3299		
	Overall	171.3547	24.5179		
Simple RT for Light (m sec)	Low	181.8573	23.3622	0.708	.493
	Medium	185.5339	21.4838		
	High	185.1321	33.4441		
	Overall	184.1325	26.4332		
Discrimination RT for Sound (m sec)	Low	216.9339	49.4681	0.889	.412
	Medium	224.1875	48.4636		
	High	216.3807	53.4942		
	Overall	219.1891	50.4429		
Discrimination RT for Light (m sec)	Low	227.5460	55.9661	0.489	.614
	Medium	234.9683	56.6558		
	High	230.5939	63.9943		
	Overall	231.0045	58.7782		

conclusive evidences are very scanty. According to Henderson and Zimbardo (1996), the biological foundation of the social fear/anxiety component of shyness is found in the action of the amygdala and hippocampus. The amygdala appears to be implicated in the association of specific stimuli with fear. The more general, pervasive conditioning of background factors related to the conditioning stimuli is known as contextual conditioning. This diffuse contextual conditioning occurs more slowly and lasts longer than most traditional CS-US classical conditioning. It is experienced an anxiety and general apprehension in situations that become associated with fear cues, such as classrooms and parties, for shy people. Research on shyness and reaction time is still in its initial phase. May be more diversification of the design, increased study sample could yield better results in this direction. One

aspect of change in the design would be spreading the measurement of reaction time for few days rather than just one day (as it was done in the present study) to establish consistency and better results. However, at present it stands at a point that we can say shyness is independent of reaction time.

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