

The Power of Subliminal vs. Supraliminal versions of the Combined Emotional Stroop Test in Measuring Attentional Bias for Test and Social Anxiety

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Abstract

The present study was carried out with the purpose of investigating cognitive attentional bias in non-clinical populations as well as evaluation of attentional bias in groups with high social and test anxiety on two subliminal and supraliminal levels. First, 300 third-grade female high-school students filled out test anxiety and social anxiety questionnaires. Afterwards, 60 high-anxiety students were selected as the subjects of the study on the basis of social anxiety ($N=30$) and test anxiety ($n=30$) variables. Moreover, in each group, 15 students were assessed as the control group. In the second stage of the study, using the Combined Emotional Stroop Test, attentional bias of the participants was assessed on two subliminal and supraliminal levels in response to anxiety stimulants. The results showed that response times and interference scores of the experimental groups were not significantly different from those of the control groups on both subliminal and supraliminal levels.

Keywords: attention bias, Combined Emotional Stroop Test, reaction time, Supraliminal, Subliminal.

Introduction

Depression and anxiety were as two common symptoms of psychiatry disorder and despite if the disorder type, depression and anxiety can be one of the main complaints patients in a psychiatric ward.

Absence of anxiety or ill-like anxiety makes us encountered to many problems and in all societies as part of human life it is seen as an adaptive and suitable response. As anxious as a part of human life, it is one of the components of the personality structure. And from this perspective that some of the anxiety in childhood and adolescence can be seen as the Normand their positive impact on the development process were adopted, because it provides the opportunity for individuals to improve their adaptive mechanisms to deal with the sources of stress and anxiety. In Psychological studies, stress has been used with different meanings. Anxiety is an unpleasant emotional state that generally is the product of mental stress and conflict and is characterized by fear and the occurrence of the future events. If this fear and anxiety are ambiguous and dispersed and don't depend on any special object and or it would be in the extreme, called neurotic anxiety.

Research done about anxiety and individual performance is strong evidence of the fact that anxiety and stress cause generally to be reduced individual's suitable and effective behaviors against different situation, especially when homework need greater intellectual steps. Though mild and managed anxiety is requisite of dynamism of human life and the natural categories to achieve human evolution and his goals, our problem is of high anxiety or anxiety like patient (morbid) that disturbs sane thought process and growing individual and will be a serious impediment to scientific activities. Test anxiety is a type of common performance anxiety that involves 10 to 30% of the students in the various

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researches and to be considered as a form of position based anxiety in which the person evaluates his position threatening. Test anxiety can be seen in students worldwide and the statistical distribution of students has been reported from % 10 to % 30.

This estimate is reported % 2/17 for high school students in Iran. Among the various types of anxiety disorders, social anxiety is one of disorders that limit the individual performance in the social environment. Fear of being judged by others in the person who suffers from this disorder, leads to feelings of inadequacy, shame and abasement in him/her. It may also lead to depression and narcotic drugs abuse. This people recognize that their fears are not reasonable and realistic but in despite of that, they cannot hide or eliminate their fear. According to conducted studies, the emotional moods such as stress and anxiety can play a crucial role in cognitive processes and memory.

In fact, it influence on an important part of the intellectual capacity and the ability to process information and cause deficit yields and poor academic performance. So the cognitive model of anxiety disorders has led to increase research over the past decade. This model consider to cognitive processes in anxiety disorders. According to cognitive theories, attention of anxiety patient is led to threatening information, as selective form. As cognitive theories, attention bias toward anxiety stimulus play essential role in information processing in individuals with anxiety disorders.

In Psychological literature, it can be found this point that in historical levels, this disorder is marked by different names, such as social phobia, social anxiety disorder and social anxiety. This difference comes back historical reasons not to qualitative one. Some authors have found disorder anxiety disorder as more appropriate title for this disorder. Because the problems associated with this disorder, is a very common phobia and is very effective on normal spheres of life. However, nowadays, social phobia and social anxiety disorder are used with similar meaning in DSM-IV. Social anxiety is a relatively new diagnostic area and for the first time it was suggested as a separate diagnosis in 1980DSM-III and two types of social anxiety are distinguished: 1. Generalized social anxiety 2. Specific social anxiety.

Test Anxiety

According to Phillips, the school anxiety includes abnormal anxiety. Sarason considered to

school anxiety as an important factor for anxiety. Mac Reynolds also believes that children with school anxiety, may experience test anxiety and social anxiety, or both of them. Since 1940 researchers found that a kind of disturbance because intense and even cause serious absenteeism of children from school, they could not express their fears. It was incomprehensible for students and for teachers.

After that, researches have been done in this area. Brayan and Son found that test anxiety negatively correlated with the ability of mind and ability to learn. Fresiss et al also express truancy and physical complaints as a result of test anxiety and its treatment depending on the anxiety treatment. This phenomenon is one of important the cognitive – emotional variable that Sarason and Mendler has started research about it seriously in 1952 Student with test anxiety is a person who has learnt courses and subjects in classroom but because of the anxiety, he/she is not able to express their knowledge. Thus, test anxiety is general anxiety and refers to a kind of anxiety or special social phobia that individual hesitate about his abilities and it lead to reduce contrasting ability to test situation and evaluation.

Mendler and Sarason expressed test anxiety components are in Figure 1. They believed that these components are traces of former learned anxiety that prevents the proper response and effective performance in the exam and poor performance in the exam is also due to cognitive and physical response to anxiety. The proposed model is a useful guide research in this area.

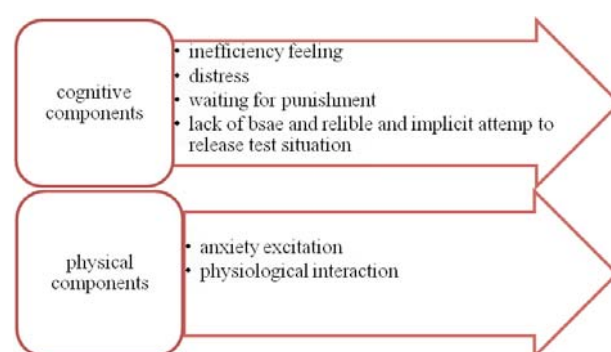


Figure 1. Test anxiety theories and models

Several models are suggested about text anxiety that is demonstrated in table 1. Major models include: attention-cognitive model, interactional process model, lack of skill model, lack of dual model, behavioral-cognitive model, and information process model.

Table 1. Authorities 'ideas about considered models in text anxiety

Model	Authority	Description
attention-cognitive model	Wine (1971)	According to Wine 'theory, anxiety is a result of the student's direct underside attention to itself rather attention to the task. Also unlike students with low test anxiety, students with high test anxiety pay attention to more limited and lower task signs. He noted those students with high test anxiety, weaker and less tendency to do homework and exams than students with low anxiety.
interactional process model	Spilberger and Vagg (1995)	This model is a comprehensive theory of test anxiety that related to interpersonal perceptions, knowledge, and information processing and retrieval mechanisms and adjusts impact and exciting in academic performance students.
lack of skill model	Paulman, R,C- cennley, K, J (1984)	This model focuses on malfunction and lack of adequate study skills to do the exam. According to this model, anxiety is a major cause of impaired performance of students affected by test anxiety, but also their study skills and test skills is typically poor.
lack of dual model	Kivimaki , M (1995)	He noted that test performance quality essentially is not related to attention deficiency and shortcoming but also deficiency in study behavior or lack of test skill can be a good reason for poor performance. So poor performance in students with high test anxiety can be related to test competence and efficiency and resulting from low performance capacity and relevant thought about the task.
behavioral- cognitive model	Sapp,M (1996)	Anxiety is a firm personality tendency that interferes with cognitive function and automated reaction and cause to maintain and extend test anxiety.
information process model	Syber (1980)	This model is helpful to explain performance in evaluated and unevaluated situation and cause more efficient in treatment. So, deficiency in student's performance affected by high test anxiety may be due to problems in learning, organizing and or due to retrieval information during exam. This approach is probably a combination of interference models and lack of learning.

Interference effects and attention bias study

A variety of methods have been used to study attention bias to different emotional stimuli in emotional disorders. In these studies, their goal is to examine the effective cognitive processing in emotional disorders. This experimental study will be divided into two types to study bias. The first type is including experimental method based on facilitation effect. Facilitations considered by impairment in attention and sensory threshold for stimulus is related to goals.

The second, including experimental patterns which is based on the interference effect. In interference effect, it is considered how to act in position

that selective stimulus should be overlooked, the adopted paradigm for this purpose is the Stoutest which is the most effective test and is used to study attention bias in patients with attention anxiety.

Stroop test

Attention bias is the main core of many cognitive theories associated with pathological disorders. One of the greatest tools that pay attention to attention biases the Stroop test. Stroop (1935) published a well-known paper about the interaction and attention. He measured the interference colors on reading words. He believes that interference is preventive. Modified form of the classic Stroop test is used to assess attention biases in information pro-

cessing, in many psychiatric disorders. In several studies, Stroop test is a reliable tool due to detailed investigation of cognitive processes in the pathology of disorder. In 1935, Stroop examined interference in serial verbal reactions to the stimulus.

Emotional Stroop Test

Emotional Stroop test is the most common among all the tests. Attempt to better understand the linkage between attention and excitement errors, have raised many parts of experimental studies that use different methods. These studies include both clinical groups and semi-clinical groups. It is said that the emotional Stroop effect has been useful as a tool for clinical assessment.

It is also able to present a major advance in understanding the attention biases and excitement. There are two main truthful reasons for this claim. One that allows comparing the clinical groups with psychological trauma about type and size of attention in the various groups together. In this test, color words with different meanings (and of course with different emotional loads) are presented to the subject and want her to ignore the meaning of words and the only answer to their color.

In this test, it has been seen that people who show attention bias towards certain emotional stimuli, have shorter reaction times rather than mentioning the outstanding stimulus colors, compared with when they react to neutral words or words that have not high emotional salience. Enormous use of this scale and test will bring great benefit to both enhance our understanding of attention bias and emotion. Emotional Stroop test has made it possible to provide a comparability tool that can present significant reliability between attention and pathology. Second, the emotional Stroop test has been provided deep insight than mechanism in which situated. Although emotional Stroop test has been studied in a variety of disorders (e.g., eating disorders) but has a different etiology and different basis and As Anxiety disorders and depression would have been able to provide a more accurate basis.

These findings suggest that stimulus evaluation occurs in the early stages of information processing automatically and without conscious. Some researchers have referred to stimulus as Subliminal to neuter the effect of processes is called as strategic control. Stimulus presentation as subliminal level cause to emerge automatic behavior. There are factors that affect the reaction time in the Stroop

test. Reaction time is one of the interesting topics in range of experimental psychology in the mid-nineteenth century. Three types of reaction time are characterized: simple reaction time, distinctive reaction time and selective. There is a stimulus and a response in simple reaction time. Two stimuli are presented in distinctive reaction time that the subject only responds to stimuli. In selective reaction time, subjects will respond according to stimulus. For example press bottom of light that appear on screen.

Galt (1899) has shown that the average of simple reaction time is about 190 ms. Dixon and McLeod studies (2004) have shown that simple reaction time is shorter than distinctive reaction time and selective reaction time is longer than simple and distinctive reaction time. Many factors can influence the time of response in the Stroop test: proportion and composition of the stimulus, sequence of stimulus, the effect of exercise, response quality, time pressure, sex, subjects age, arousal level, personality and intelligence. A bias in information processing is a pathological sign in pathological disorder. In this model, selective attention toward the information about the disorder can worsen the processing of negative emotional stimuli. For example, in depressed individuals, an automatic bias toward threat-related information can intensify individual's negative attitudes towards around the world.

For example, there is strong evidence to suggest that the people, who were suffering from post-traumatic stress disorder, show a greater attention bias than words associated with their disorder but they don't show action to the unrelated words to their injury. Increasing attention bias cause outstanding special anxiety stimuli and then attention bias is created to risk estimation and this increase make extension of anxiety disorders.

Background research

In a survey examined the processing of stimulus associated with visceral symptoms in patients with irritable bowel syndrome (IBS), and researchers were trying to find the issue of whether the irritable bowel syndrome patients show attention bias toward symptom associated with irritable bowel syndrome than usual people ?

Results have shown that patients presented longer reaction time to name color of relevant stimulus related to bowel syndrome, compared to neutral words. Results show that patients with IBS show at-

tention bias to words related to their IBS symptom as selective state when words are presented more supraliminal than when presented as Subliminal. The study results showed that patients with checking obsession perform slowly than washing obsession in the color naming of emotional information in Subliminal level. The results predict that patients with obsessive may process with slower speed threatening information.

The results of Davison et al (2007) showed in Stroop test that the interference in color naming occurred for only supraliminal condition to threatening words. Non-clinical participants with insecure attachment showed inhibitory responses in the Stroop test. Clinical participants with secure attachment showed the greatest interference in the face of threatening stimuli compared with other groups.

The results in the free recall test showed that reminding all stimulus was conducted by participants who had a secure attachment pattern. Participants who had a secure attachment and out-patient groups showed better reminding of threatening words compared with unsafe participants in the free recall test.

In this study, Dixon and MacLeod (2004) examined the cognitive processing of emotional information in depression disorder, panic attacks and physical form disorders. 4 types of physical threatening, positive, negative and neutral words were given in emotional Stroop test (Subliminal and supraliminal), memory cache test (taxitoscope) and apparent memory test (free reminding after learning process) to patients were suffering from severe depression, $n = 30$, panic attacks $n = 33$, physical impairment $n = 25$ and healthy subjects in controls group $n=33$.

The findings showed that patients, who were studied in both experiments, were suffering from panic disorder and obligatory obsession with control group. In first trial, 21 panic patients and 20 patients in control group were participated. In the second trial, 20 patients with panic and obligatory obsessive patients, 20 participated. In examining patients with panic, obligatory obsessive and control groups showed no differences in the Stroop test.

Himberg' findings (2000) found that persons, who are suffering from panic attacks or social phobia, show greater interference for words related to physical and social threat. Extensive researches was conducted on various disorders in Subliminal & supraliminal levels. That some finding verified each other and some one result in contradiction.

In Stroop test, patients who suffering from panic, showed interference for negative words in subliminal level and patients with physical disorder showed interference in supraliminal for physical threatening words. Any patient groups didn't show bias regard to memory cache. In apparent memory test, depressed patients and patient with anxiety attacks showed memory bias for negative words and patient with physical disorder present bias for physical threatening. Zolner et al (2000) have examined memory bias and attention associated with emotional information in crime victim with acute PTSD. In this study, 39 victim participate with acute PTSD and 39 years old who have sexual similarity with control group and were evaluated test subject in Subliminal& supraliminal levels by Comb emotional Stroop test, the cache memory test (taxitoscope recognition) and apparent memory «free recall» with three words ,disturbing , positive, neutral.

PTSD patients showed a supraliminal interference for words associated with disturbing and positive words. Results expressed that in individuals with acute PTSD show a memory bias related to threat information. In the study, the emotional Stroop test was complemented on individuals who have borderline personality disorder and according to the cognitive theory of hypothesis, were examined for signs of danger alert in borderline personality disorder.

In these test 15 patients with borderline personality disorder, 12 patients, 15 non-patients in control group were participated in tests of color naming of emotional and non-emotional words that appear in the three colors on the computer screen. They were evaluated in Subliminal level that words were presented to individuals in more short time then words were covered to prevent recognizing words consciously. Next were used four classes of negative words in supraliminal that including three categories certain words about borderline personality disorder (negative view to another, related words associated with sexual abuse and negative description of itself) and was a class of negative words unassociated with the pathology of borderline personality disorder. Unlike none patient groups, it showed both borderline disorder patients and interference in supraliminal level. No difference was observed between the clinical groups and no evidence for the effect class of specific stimulus. In this test, subliminal versions of the Combi Emotional Stroop test was failed to obtain any meaningful effect.

Research Objectives

According to the theoretical foundations are presented in this study, hypotheses including: A) Those that have high test anxiety compared to those without a high test anxiety will show longer interference score to threatening stimulus of test anxiety in subliminal level. B) Those that have high test anxiety compared to those who have not high test anxiety will show longer interference score to threatening stimulus of test anxiety in supraliminal level. C) Those who have high social anxiety compared to those without a high social anxiety, will show longer interference score to threatening stimulus of social anxiety in Subliminal level D) Those who have high social anxiety compared to those without a high social anxiety, will show longer interference score to threatening stimulus of social anxiety in supraliminal level .

Methodology

In this study were used the Combi Stroop test, which will include a combination of words and visual stimulus. To eliminate the effect of consciously control of the stimulus is presented as supraliminal (conscious) and Subliminal (unconsciously) to examine role the automatic cognitive processes .in this study, Proof of attention bias toward stressful stimulus can be important step to control attention and remedial appropriate processes.

Given the conflicting findings that exist in the sub-threshold and super-threshold levels of anxiety and according to little research was done in the area of test anxiety on attention bias field, this study examines a hybrid version of the Stroop test in two levels Subliminal & supraliminal, and between social anxiety disorder and test anxiety disorder. In the Combi emotional Stroop test used a combination of pictures and words. 90 subjects participated in this study.

30 people have high test anxiety and 30 people have high social anxiety who have responded to the Combi Stroop test in Subliminal & supraliminal level. In the control group, 30 patients were evaluated with the same technique (two groups of 15). In this study, all subjects were female and were graduating in three different academic disciplines (mathematics, experimental, human).Subjects were tested in social anxiety groups and test anxiety groups among 16 to 18 year age, also control groups had similar position.

Research Tools

To determine participants' scores on social anxiety, social anxiety questionnaire were used. The questionnaire deals with evaluation people's problem that are anxious compared with others in social situations and may be anxious to evaluate to themselves. This test has two social avoidances (SAD) and Fear of Negative Evaluation (FNE). To determine subjects'scoreis used test anxiety Inventory (TAI).Cronbach's alpha coefficient was used to assess the internal consistency. It has been reported on the results, the coefficient alpha for the total sample, %94and %95for female subjects and 92% for male subjects. Also it has been used Combi emotional Stroop test, in which is used both words and the images to assess attention bias. Reliability is contained using retest for the total subjects, male and female subjects were respectively % 0/77, % 0/88 and % 0/67.

Test providers applied the 58-point Smith' self-respect scale to assess criterion validity. Coefficients of criterion validity for all subjects, both male and female subjects are respectively 0/57, 0/68 and 0/43. Software Super Lab Pro (SKD) were used to construct a computerized Stroop test. All stimuli were presented with 13 inch pc monitor that was 40 to 55 cm away from the subjects' eyes.

Results

To evaluate the first and second hypotheses, were compared a group that had high test anxiety with group which had lower anxiety scores. The mean and standard deviation of reaction time to different stimuli are given Subliminal & supraliminal levels in Table 2.

In order to compare the reaction times with different stimuli were used in Subliminal level in test anxiety subjects compared with the normal group with multivariate analysis of covariance. Table Results of multivariate test showed that the effect of group (Wiks' Lambda F) ($4/36 = 1/75$, $p=0/159$, $d=0/885$), was no significant different. Also interactive effect between group and discipline was no meaning in response to any stimulus. Despite this, effect test of intergroup the effects indicated that effect of group was meaningful on the response time to the congruent -test anxiety stimulus ($F=5/04$, $p=0/31$, $d=0/717$).So those people with test anxiety have a longer reaction time to congruent stimuli associated with threat. The same statistical model was used to compare the response time to different stim-

uli in supraliminal level. Scores associated with response time to stimulus were presented as dependent

variables and group as the first independent variable, and education as second independent variables.

Table 2. The mean and standard deviation of reaction time subjects to test anxiety to various stimuli.

stimulus		Test anxiety group		Usual group	
		M	SD	M	SD
Anxiety - congruent	Subliminal level	780/46	89/46	712/47	92/77
	supraliminal level	772/85	104/33	698/69	91/33
Anxiety - incongruent	Subliminal level	825/42	121/72	788/02	126/95
	supraliminal level	812/02	123/42	774/36	101/59
neutral - congruent	Subliminal level	789/71	95/75	732/36	116/67
	supraliminal level	758/81	95/29	730/51	100/87
neutral - in congruent	Subliminal level	838/26	122/85	770/69	126/87
	supraliminal level	708/33	124/46	761/82	114/52

The results of multivariate tests in table showed that the effect of group ((Wiks' Lambda F (4/36) = 2/480, p=0/061 and d=1/049), interaction between academic discipline (Wiks' Lambda F (8/72) = 0/834, p=0/576, d=0/609) didn't show Significant effects between the groups. Nevertheless, the study of inter-

group impacts showed significant effect on reaction time to test anxiety - congruent stimulus (F=4/85, p=0/03, d=0/685). So those people with test anxiety had longer response time to congruent stimulus associated with threat. Results of comparable review related to reaction time results are given in Tables 3 and 4.

Table 3. Results of multivariate analysis for response times on test anxiety group

		d	p	F
Anxiety – congruent	Subliminal level	0/71	0/031	5/040
	Supraliminal level	0/68	0/039	4/58
Anxiety –incongruent	Subliminal level	0/27	0/40	0/70
	Supraliminal level	0/30	0/35	0/87
neutral – congruent	Subliminal level	0/49	0/134	2/34
	Supraliminal level	0/27	0/39	0/75
neutral –incongruent	Subliminal level	0/49	0/13	2/40
	Supraliminal level	0/29	0/36	0/85

Table 4. Results of multivariate covariance analysis in interaction between the response time of test anxiety and discipline

		d	p	F
Anxiety – congruent	Subliminal level	0/50	0/29	1/25
	Supraliminal level	0/65	0/13	2/07
Anxiety –incongruent	Subliminal level	0/40	0/45	0/81
	Supraliminal level	0/56	0/23	1/50
neutral – congruent	Subliminal level	0/56	0/22	1/55
	Supraliminal level	0/45	0/38	0/97
neutral –incongruent	Subliminal level	0/49	0/31	1/19
	Supraliminal level	0/65	0/14	2/04

Social anxiety group' response also were considered control group. The mean and standard deviation of response time are given to different stimulus in subliminal level in Table 5.

Multivariate analysis of covariance were used to compare the reaction times to different stimuli in the subliminal levels in social anxious individuals compared with the normal group. Sores related to response time to stimulus were applied as dependent variables, group and discipline as the independent variable. The results in test table of the multivariate showed that the group effect (Wiks' Lambda F (4/36) = 3/48, $p=0/029$. $d=1/154$) and the interaction between group and discipline (Wiks' Lambda F (8, 72) = 2/18, $p=0/039$. $d=0/984$) was Meaningful.

Despite of this, examination of intergroup effects was indicated of meaningful interaction between group and discipline for responses time to neutral - congruent. Stimuli (F = 5/22, $p=0/010$

and $d=1/034$). Thus, students in experimental discipline (M= 825/47, SD=74/80) response faster than the math discipline group (M= 713/81, SD=100/60) to stimulus. And to compare response time to different stimulus in supraliminal level in multivariable test showed that group effect Wiks' Lambda F (4,36) = 0/983 , $p=0/429$ and $d=0/660$) and interaction between group and discipline Wiks' Lambda F (8,72) = 1/93 , $p=0/069$. $d=0/924$) didn't show significant difference between groups. Nevertheless consideration of intergroup effect was indication of meaningful interaction between groups and discipline for responses time associated with neutral – congruent stimulus F = 3/935, $p=0/028$ and $d=0/898$). So, students in experimental discipline (M= 835/42, SD=143/58) response faster than the math discipline group (M= 744/06, SD=110/75) to stimulus. Result of Comparable consideration for response time is given in Table 6 and 7.

Table 5. Mean and standard deviation of reaction times related to social anxiety subjects in different stimulus

Stimulus		Test anxiety group		Usual group	
		M	SD	M	SD
Anxiety – congruent	Subliminal level	758/30	109/08	722/53	97/24
	Supraliminal level	731/92	103/60	671/70	70/23
Anxiety –incongruent	Subliminal level	798/86	118/61	782/86	127/42
	Supraliminal level	781/35	121/26	721/99	76/14
neutral – congruent	Subliminal level	723/45	115/65	720/83	94/77
	Supraliminal level	728/34	101/46	692/86	87/48
neutral –incongruent	Subliminal level	766/10	95/32	796/40	117/72
	Supraliminal level	775/53	137/64	709/56	96/14

Table 6. Results of multivariate analysis of covariance for response times of social anxiety group

		d	p	F
Anxiety – congruent	Subliminal level	0/42	0/19	1/737
	Supraliminal level	0/62	0/05	3/806
Anxiety –incongruent	Subliminal level	0/23	0/46	0/53
	Supraliminal level	0/34	0/12	2/46
neutral – congruent	Subliminal level	0/063	0/83	0/047
	Supraliminal level	0/34	0/28	1/15
neutral –incongruent	Subliminal level	0/27	0/38	0/76
	Supraliminal level	0/55	0/093	2/97

Table 7. Results of multivariate analysis of covariance in the interaction between the response time of social anxiety group and discipline

		d	p	F
Anxiety – congruent	Subliminal level	0/68	0/11	2/29
	Supraliminal level	0/65	0/13	2/087
Anxiety –incongruent	Subliminal level	0/71	0/09	2/48
	Supraliminal level	0/58	0/20	1/66
neutral – congruent	Subliminal level	0/43	0/39	0/94
	Supraliminal level	0/58	0/20	1/66
neutral –incongruent	Subliminal level	0/034	0/01	5/21
	Supraliminal level	0/89	0/02	3/93

In order to study first to fourth assumptions was used two statistical model analysis of variance for repeated measures. Interference scores are presented in Subliminal & supraliminal levels for test anxiety-related stimulus (first model), and social anxiety-related stimuli (second Model) as the dependent

variable, the test (with two levels: Subliminal & supraliminal levels), Group (two levels: experimental and control) and discipline as the independent variable. Mean and standard deviation scores related to subject' interference in two groups overlap, subjects are given in Table 8.

Table 8. Mean and standard deviation of subject 'interference scores

V ariable		Test anxiety group		Usual group	
		M	SD	M	SD
Interference score in Subliminal level	experimental	-40/56	56/98	-44/95	74/46
	control	-60/32	88/28	-75/55	80/57
Interference score in supraliminal level	experimental	-49/42	43/72	-39/16	54/50
	control	-50/29	59/97	-75/67	48/29

The results showed that in the first model (test anxiety) had not any significant effects, i.e. The test effect ($F = 0/94$, $p=0/76$ and $d=0/089$), interference between test and group ($F = 0/006$, $p=0/937$ and $d=0/000$), test and discipline interference ($F = 0/013$, $p=0/987$ and $d=0/063$), none were significant. The results are given in Table 9.

Table 9. Results of ANOVA for repeated measures for stimulus-related interference scores for test anxiety.

	d	p	F
Test effect	0/089	0/76	0/94
Test and group	0/00	0/93	0/006
Test and discipline	0/45	0/38	0/97
Test , group, discipline	063/0	0/98	0/013

Results from the second model (social anxiety) also showed that none of the main effects i.e. the test effect ($F = 0/000$, $p=0/99$ and $d=0/000$), group and tests interaction ($F = 0/258$, $p=0/614$ and $d=0/167$), test and discipline and group interaction ($F = 0/177$, $p=0/839$ and $d=0/190$), none were significant. The results are given in Table 10.

Table 10. Results of ANOVA for repeated measures for stimuli related to social anxiety scores

	d	p	F
Test effect	0/00	0/99	0/00
Test and group	0/16	0/61	0/25
Test and discipline	0/19	0/83	0/17
Test , group, discipline	0/38	0/50	0/70

Thus, none of the research hypothesis was not confirmed.

Discussion and Conclusion

Social anxiety disorder is a most common disorder and be linked with injuries in life quality and also result in considerable economic costs and functional strong weakness in professional and educational range. In among type of anxiety disorder, social anxiety is one of disorders that limit individual performance in social environment.

So, cognitive models of social disorders cause to increase research in last two decades. These models concern to motivational process in anxiety disorders. According to recognition theory, attention bias play essential role in information processing than anxiety stimulus in individual affected by anxiety disorders. To understand bias in recognition disorder, psychological theories According to cognitive theories, biases attention towards stimuli anxiety plays a major role in information processing in individuals with anxiety disorders. To understand the bias, cognitive impairment, increased psychological theory and clinical research considerably to the information processing paradigm of cognitive psychology has come to investigate. The paradigm adopted for this purpose, the Stroop test is the most effective test is used to assess attention bias in anxious patients.

Emotional Stroop test has made it possible to provide a comparative tool to bring significant reliability between attention and pathology. Although the emotional Stroop test has been studied in a variety of disorders (e.g. eating disorders) but has a different etiology and as anxiety disorders and depression do not provide a correct basis.

The results of this study showed that there is no significant interference score measurement in test anxiety scores at two Subliminal & supraliminal levels and none of the effects test (test effect, test interaction and group, test interaction and discipline and test interaction, group and discipline.

Results from the second model (social anxiety) also showed that there is no significant interference score measurement at two Subliminal & supraliminal levels in test anxiety scores and none of the effects test (test effect, test interaction and group, test interaction and discipline and test interaction, group and discipline. it means that it wasn't confirmed anyone. In analyzing the results of this study, lack of confirmation were considered by ex-

amining the nature of social anxiety disorder and related test bias hypothesis is confirmed by the reasons. Social anxiety based on fear revolves around the non-visible events such as negative evaluation, criticism or rejection from others that might be focused on certain aspects of social interaction such as speaking, eating or writing in groups. These thoughts are often related to situation that individual in which is taken into consideration and negative evaluation.

Consequently, Social anxiety is persistent and debilitating state that is associated with anxiety and avoidance of social interaction situations or efficacy and intense fear of ashamed or being inept. Several reasons can be mentioned to confirm the hypothesis: This trial did not confirm the previous findings. Test anxiety groups and social anxiety groups acted in the same manner in response to Subliminal & supraliminal stimuli and there was no difference between control and experimental groups in response to stimuli. First, the difference could be referred evaluating methods of anxiety student's ratio to select experimental groups.

Students were assessed through questionnaire test that couldn't differentiate accurately clinical anxiety groups from normal groups. Many research findings use clinical anxiety disorders such as anxiety (phobic, social anxiety and post-traumatic stress,), which their results was closer to study attention bias to the real world. Disorders that were examined in this study, exposure to the real conditions make life more meaningful.

According to Datak and Stauber (2001), the interaction of cognitive tests can be sensed when someone enters an unfamiliar environment and may feel discomfort and tension. According to findings, test anxiety is a form of phobic. Irrational fear of apposition or an object in where person have not predictable reaction. The studies that have been conducted around the world have proven that increases anxiety symptom often in frequently during social change caused by war, political strangling, the industry evolution and related events, symptoms of anxiety. Accordingly, anxiety means in real-life situations. One of reason for lack of confirmation in our finding refers to position that is conducted in this test. Subjects were completely aware that didn't influence on position and scores and are not evaluated. To confirm this finding, Sullivan showed no significant difference to receive test anxiety groups compared with the control group. So there is no real difference between experimental and control

groups without existence of real phobic stimulus of interaction.

According to these findings, individual should be tested in real conditions or stimulus that exposed to him/her, it should be clear enough to be interference and cause activation of cortex. But in this study, individuals were quite quiet and away from threatening stimuli. So there are no anxiety symptoms in them which didn't cause considerable bias. The findings seem important because the main reason of students refers to how to assess students in the classroom in the educational environment and this finding is very effective in the education system and Suggests that anxious individuals will have excellent performance under low stress. Another reason for rejecting hypotheses of hypothesis can be due to non-resolution images on the Stroop test to assess attention bias subjects.

For usage of the stressful images was trying to select anxious images closely to the real world. But one of the reasons for rejecting hypotheses can be used for false images. This is why finding didn't show differences in both Subliminal & supraliminal levels can be identical ability in two tests in the two levels of anxiety measurement.

These findings answer the research question well, which Subliminal & supraliminal version of Stroop predict attention bias to same ratio. Threatening information processing takes place in Subliminal levels, automatically and fast. This is Why attention bias was not confirm in this area, perhaps due to nonexistence of anxiety load and lack of anxiety in subjects because in this circumstances, subjects didn't need to divert their attention from threatening information and didn't develop cognitive inhibition. By the same token, nonexistence of attention bias can be due to the absence of the actual stimulus in supraliminal level and the subject is aware that his response didn't influence on in the evaluation of him/herself.

In this study, interactive investigation between the group and discipline in Subliminal & supraliminal levels in the socially anxious individuals showed significance of response time related to Neutral - incongruent stimulus. Thus, the experimental discipline group students had responded faster to stimuli than Mathematics group.

In this analysis, findings can be assumed that discipline could be major factor in difference of attention bias between the groups. But this finding has no effect on evaluating research hypotheses and was not examined in this study; we do not discuss the reasons for it.

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