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THE RELATIONSHIP BETWEEN ANXIETY, ATTRIBUTIONAL STYLE AND ACADEMIC PERFORMANCE

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In the past several decades several studies have investigated the relationship between anxiety and attributional style in students, supporting that the anxious students trend to attribute failure to internal factors, such as lack of ability, and success to external factors, such as luck. As well, a significant negative relationship has been obtained between anxiety and test performance; that is, high levels of anxiety are associated with performance decrements.
The aim of the present study was to invetigate the relationship between anxiety (general anxiety and test anxiety), attributional style, and academic achievement, as a whole.

The following questionnaires were administered to a sample of 141subjects (students in secondary schools of Madrid): *Inventario de Situaciones y Respuestas de Ansiedad* –ISRA, *Test Anxiety Inventory* –TAI, and the learned helplessness scale KASTAN. As well, grade average was obtained.

Results on correlations between these topics are presented and discussed, remarking an integrated approach between anxiety, attributional style and academic achievement.

Key Words: Anxiety, Test Anxiety, Attributional Style, Academic Performance.

Introduction

In the world of today, test situations are increasingly frequent in the lives of individuals. From the first years in school to university, the number of tests a student must pass is huge and a student's future is to a large extent determined by his or her performance at such tests. In a similar way, tests are an ever-present reality at work and indeed achieving a job more often than not requires passing selection tests, aptitude tests, competitive examinations, etc.

Although such situations are very frequent, most people do not feel comfortable when being evaluated and a high percentage usually shows high levels of anxiety over this kind of situation. Besides, under certain

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circumstances, anxiety has a clearly weakening effect on test performance. For these reasons, anxiety in test situations has become a problem of great magnitude. (Hembree, 1988; Sarason & Sarason, 1990; Schwarzer & Jerusalem, 1992; Spielberger & Vagg, 1995).

As a rough estimate, approximately 15-25% of Spanish secondary school students is believed to show high levels of anxiety over their exams (Escalona & Miguel-Tobal, 1996). This high prevalence, together with the close relationship between anxiety and performance decrease, allows to establish that, for a high percentage of students, academic failure is caused in part by their levels of anxiety (Escalona & Miguel-Tobal, 1996).

Under achieving and, in general, the inability to deal with an exam situation adequately can be important factors in developing different kinds psychological disorders such as school phobia, depression, etc. One of the few studies about this subject by King, Mietz, Tinne and Ollendick (1995), found that quite a high percentage (61%) of the students with high test anxiety had anxiety disorders according to DSM-IIIR criteria (APA, 1987), as well as higher levels of depression than low-anxiety students.

Regarding the consequences of high levels of anxiety over exams for the physical health of students, there are some notable studies that show negative effects on the immune system. Kiecolt-Glaser et al (1986) found a decrease in the count of T cells and in the activity of natural killer (NK) cells during the exam period in a sample of medical students. In a subsequent study by Glaser, Lafuse, Bonneu and Atkinson (1993), reduced T lymphocyte activity and reaction to mitogens were recorded. During exam periods, particularly in the higher years, the behavioral patterns of students change significantly, with increased consumption of stimulants, reduced number of sleeping hours, increased sedentary lifestyle, etc., which in the long run can cause health problems.

Test anxiety comprises two components: worry and emotionality. The worry component refers to cognitive aspects such as negative expectations about the results, the situation, and the consequences of bad performance, while the emotionality component refers to the perception of physiological activation and to the displeasing feelings such as nervousness and stress that the individual experiences over the test. It should be emphasized that the "emotionality component" and the "physiological activation" are not equivalent terms, since the former refers

to the degree to which the individual is aware of the autonomic arousal or focuses his/her attention on it, rather than to the activation level itself.

The worry and emotionality components around which a very important part of the research is centered, often show a high correlation, and some authors, such as Ware, Galassi and Dew (1990), point to the existence of an oblique factorial relationship between these two components. Nevertheless, these factors are considered as conceptually separate, as they are activated and maintained by different situational variables (Deffenbacher, 1980; Morris, Davis & Hutchings, 1981).

In this vein, it has been found that these components vary with the proximity of the test in time and the subject's expectations of performance. The cognitive component is activated by cues emphasizing the evaluative nature of the test and a possible test failure and is considered to be quite constant over time, decreasing as the subject's success expectation increase. The emotional component appears to be activated mainly by factors at the beginning of the test and rapidly decreases after the end of the test (Liebert & Morris, 1967; Doctor & Altman, 1969; Morris & Engle, 1981).

Once these components were identified, a large part of the research has centered on the analysis of the relationship between each of the components and test performance. A number of works show a high negative correlation between the cognitive component (i.e. worry), and performance, and a low correlation between the emotional component and performance (Hembree, 1988; Kleine, 1990; Seipp, 1991, Williams, 1996).

Attributional style has been widely researched for its relationship to depression. There has been little work its relationship to test anxiety, however. Attributional style includes three major dimensions: locus of control, stability, and generality. Locus of control may be internal or external and refers to whether the subject ascribes the cause of an event to him/herself or to external circumstances (e.g. intelligence vs. luck). The stability-instability dimension refers to whether the subject considers that the factor causing an event will remain in time or is transitory in nature. The specificity-generality dimension refers to whether the cause is ascribed to specific aspects (e.g. ascribing a fail mark in mathematics to lack of ability for this subject) or to general aspects (e.g. ascribing a fail mark in mathematics to bad luck that the subject believes to have in

his/her studies).

For examinations, attributional styles of success and failure are closely linked to the subject's expectations of effectiveness in the exams to be taken and, therefore, to the subject's anxiety level. Research by Arkin, Kolditz and Kolditz (1983) showed that students with high test-anxiety levels tend to ascribe failure to lack of ability (i.e. to internal and stable factors) and success to behavioral features such as effort (i.e. to internal and unstable factors). Leppin, Schwarzer, Belz, Jerusalem and Quast (1987) and Bandalos, Yates and Thorndike-Christ (1995) achieved similar results in their research on failure. Subjects with high anxiety ascribed their success to external factors, such as luck. Therefore, the relationship between test anxiety and attributional style is not clear - some research such as Swendsen's (1997) failed to find a significant correlation between attributional style and anxiety levels.

Given the importance of this subject on both theoretical and practical grounds, in the Universidad Complutense we have initiated a line of research that focuses on the relationship between anxiety, attributional style and academic performance. The main purpose of the present study was to investigate the correlations between anxiety, attributional style and academic performance in high school students.

Method

Subjects

The sample is formed by 141 subjects, 73 (51.8%) males and 68 (48.2%) females, who were studying at high schools in Madrid. The subjects were all in the four final years of study, and their ages ranged from 15 to 18 (mean age = 16.8).

Instruments

The inventories employed in this research were:

a) *Inventario de Situaciones y Respuestas de Ansiedad* -ISRA- (

Miguel-Tobal & Cano-Vindel, 1986, 1988, 1994). This inventory measures the three systems of response (cognitive, physiological, and motor), the general level or trait of anxiety as well as four situational areas or specific traits (test anxiety, interpersonal anxiety, phobic anxiety, and daily life anxiety).

b) *Test Anxiety Inventory* -TAI- (Spielberger, 1980). This inventory offers a specific measurement of anxiety over exams by two factors: (W): worry and (E): emotionality, as well as a total score of the test anxiety trait. Worry measures cognitive aspects, mainly negative thoughts related to own performance as well as with the possible consequences of a poor performance. Emotionality measures the perceived level of autonomic arousal in the exam situation.

c) KASTAN *Inventory* (Kaslow, Tannembaum, Alloy, Abramson & Seligman, 1980). This questionnaire measures the subject's attributional style for success and failure through six main scales: locus of control for success and failure, stability-instability in relation to success and failure, and generality-specificity in relation to success and failure. It further provides three supplementary scales of a general nature, namely: attributional style of success (the sum of the scores obtained in the three preceding components relating to success), attributional style of failure (the sum of the three scores obtained in the three components relating to failure), and a total score, which is interpreted as a measure of attributional style in general. This latter scale may obtain a negative score, which would show a tendency towards learned helplessness.

In addition to the psychological assessment, the academic performance of the subjects was also measured by means of the average results obtained at exams during the first quarter.

Procedure

The tests were conducted in two consecutive days during the students' school hours. The TAI and ISRA were conducted in the first session and KASTAN in the second session, and the average grades of each of the subjects were recorded. The tests were group administered and the sessions lasted for about one hour each.

Results

Descriptive statistics for all of the variables are shown in Table 1. Correlations between the different scales under study were also calculated. The following are the results derived from the correlation analysis. Correlations that are statistically significant are indicated.

a) Relationship between anxiety and academic performance
The results obtained show a highly significant negative correlation between anxiety over exams as measured through TAI and academic performance (r_{xy} = -.22, p< .01). Regarding the two components, it should be stressed that worry shows a negative and significant correlation with performance (r_{xy} = -.31, p<.001), while the emotionality component is not significantly correlated with this variable (p = ns). None of the correlations between ISRA and academic performance are statistically significant (see Table 2).

Among the different aspects of anxiety, the variables showing a significant correlation with academic performance seem to be academic test anxiety and, in particular, its worry component, so that the higher is the level of anxiety over the exam situation, and especially the higher is the frequency of negative thoughts about performance in the test, the higher is the reduction in academic performance.

b) Relationship between anxiety and attributional style. There were moderate but significant correlations between one of the KASTAN scales, i.e. the attributional style of failure, and TAI, more specifically the total score (r_{xy} = .18, p<.027) and the worry component (r_{xy} = .19, p<.022). As can be seen, the correlations between such variables are positive, which shows that when the subject tends to ascribe failure to internal, general, and stable factors (such as low ability or intelligence), the level of anxiety over exams, in particular the cognitive component, will be higher. However, the correlations found in this work between the attributional style for success, also as measured by KASTAN, and TAI do not reach statistical significance and, therefore, there is not a relationship between a subjects' ascription of success and his/her anxiety over exams (See Table 3).

Table 1. Mean and standard deviations of the sample in TAI, ISRA, KASTAN, and Grade Point Average.

TAI		
	MEAN	S.D.
WORRY	14.65	4.47
EMOTIONALITY	19.44	5.99
TOTAL SCORE	34.09	9.51
ISRA		
	MEAN	S.D.
COGNITIVE	69.11	28.3
PHYSIOLOGICAL	39.77	25.16
MOTOR	48.77	29.6
TOTAL	157.66	71.6
F1 (TEST ANX.)	68.28	30.91
F2 (INTERPERSONAL ANX)	20.18	12.98
F3 (PHOBIC ANX.)	28.20	21.41
F4 (DAILY-LIFE ANX.)	18.4	12.95
KASTAN		
	MEAN	S.D.
INTERNAL (+)	3.83	1.65
STABLE (+)	4.26	1.86
GLOBAL (+)	4.36	1.74
TOTAL (+)	12.45	3.57

INTERNAL (-)	4.17	1.88
STABLE (-)	2.88	1.55
GLOBAL (-)	1.63	1.29
TOTAL (-)	8.69	2.64
ATTRIB. STYLE	3.76	4.64
GRADE POINT AVERAGE		
	MEAN	S.D.
G.P.A.	1.84	1.02

Table 2 . Correlations between TAI-ISRA and the Grade Point Average

	G.P.A.
TAI- Worry	-.31***
TAI- Emotionality	-.11
TAI- Total	-.22**
ISRA- Cognitive	-.04
ISRA- Physiologic	-.002
ISRA- Motor	-.10
ISRA-Total	-.05
ISRA- F1	-.002
ISRA- F2	-.05
ISRA- F3	-.06
ISRA- F4	-.005

Significance levels: ** p< .01 *** p<.001

Table 3. Correlations between TAI/ISRA and KASTAN

	WORR	EMOT	TOT	COGN	PHYS	MOT	TOT	F1	F2	F3	F4
INTER +	-.10	-.04	-.15	-.07	-.15	-.05	-.10	-.15	-.13	-.07	-.13
STAB +	-.03	.03	.01	.01	.05	-.01	.02	.02	.10	-.06	-.01
GLOB +	-.12	-.02	.04	-.01	.02	-.03	.01	.04	-.05	.04	-.01
TOT +	.005	-.01	-.04	-.03	.03	-.04	.04	-.11	-.13	-.04	-.01
INTER -	.13	.07	-.10	.07	.01	.02	.02	.04	.01	-.03	-.06
STAB -	-.03	.10	.11	.10	.03	.16	.13	.03	.01	.19	.13
GLOB -	-.11	.10	.11	.13	.14	.10	.16	.15	.13	.12	.15
TOT -	-.19*	.15	.18*	.17*	.12	.15	.17*	.14	.10	.15	.18*
ATT. STYLE	-.11	-.10	-.10	.12	-.10	-.14	-.13	-.15	-.15	-.12	-.16

Significance levels: * p< .05

As for the relationship between KASTAN and ISRA, we only obtained three significant correlations; again, it is the attributional style of failure the one that correlates with anxiety, specifically with trait measure (r_{xy} = .17, p<.042), with the cognitive component (r_{xy} = .17, p<.045), and with anxiety in daily life (r_{xy} = .18, p<.031). Therefore, people who tend to ascribe failure to internal, stable, and general factors will tend to interpret situations as threatening and show high levels of, in particular, cognitive anxiety in their daily lives.

c) Relationship between attributional style and academic performance
The only statistically significant correlation is that between the attributional style of failure and academic performance (r_{xy} = -.22, p<.01). This is a negative correlation, which means that the higher is the tendency to ascribe failure to internal, stable, and general factors, such as low capacity, the lower will be the performance of the subject. As can be seen in Table 4, no other correlation reaches statistical significance.

Discussion

The main findings derived from in the present study are summarized below.

Anxiety over exams is closely related to general test anxiety, so that students with high test anxiety will tend to show high anxiety levels about other situations in which they must show their abilities, such as speaking in public, talking to professors, etc. The close relationship

between test anxiety and anxiety in daily life reveals the possible consequences of anxiety for the lives of students with high levels of test anxiety . Therefore, we should bear in mind that students with a high level of test anxiety will experience important levels of suffering and performance deterioration, which in many cases will require the intervention of a health professional.

Table 4. Correlations between KASTAN and the Grade Point Average

	G.P.A.
INTER+	-.05
STAB +	.12
GLOB +	-.14
TOT +	-.03
INTER-	-.11
STAB -	-.13
GLOB -	-.14
TOT -	-.22*
ATT. STYLE	.1

Significance levels: * p< .05

On the other hand, it should be stressed that even when a subject shows very high anxiety levels about test situations in general, academic performance is only related to test anxiety. Therefore, to know the effects of anxiety on performance, it will be preferable to use tests specifically related to the test situation being measured, rather than using general tests, as Mandler and Sarason (1952) have already advocated. Thus, if we want to know the effects of anxiety on academic performance, it will be more effective to use a questionnaire measuring specifically anxiety over exams; if our interest centers around the effects of anxiety on sports performance, using a questionnaire on competitive anxiety will be more suitable, etc.

In our study we have found a negative and significant correlation between the cognitive component (worry) and academic performance, and a low correlation between the emotional component and performance, as prior works have also found (Hembree, 1988; Seipp, 1991; Mueller, 1992; Tobias, 1992; Hodapp et al, 1995). This finding supports the idea that the worry component is the main source of

interference with the subject's performance. In this vein, it should be noted that the cognitive-attentional interference theory (Wine, 1971, 1980, 1982) is the most widely accepted by the scientific community. According to Wine, the weakening effect of anxiety is due to the fact that the subject focuses his or her attention on internal aspects, such as self-evaluative and self-deprecating thoughts, rather than on the task itself. Thus, performance deterioration is due to an attentional deficit that causes an interference with the recovery of learned material, as the subject focuses his/her attention on irrelevant rather than relevant aspects for a suitable solution of the task.

Finally, we consider of particular interest the high negative correlation between test anxiety and the attributional style of failure. On the one hand, this finding shows the trend of subjects with anxiety towards selecting and focusing on negative information and interpreting it as a threat, as they ascribe failure to internal, stable, and general factors. Second, the perception of a lack of control over failure is strongly associated to learned helplessness, which might explain the depressive symptomatology and the trend to drop out studies that characterizes students with high test anxiety. From a clinical viewpoint, based on these findings, it would appear that intervention would be more effective if students with anxiety are taught strategies to ascribe failure correctly, rather than strategies bearing on the ascription of success.

Although we consider that the findings obtained here to be of high interest, we believe that an essential next step is increasing the size of the sample and finding out whether other variables such as age, sex, and type of education (public vs. private) influence on the relationship between anxiety, attributional style, and academic performance.

Riassunto

Oggi certe situazioni, come sostenere un esame, il dovere parlare in pubblico o una intervista di lavoro risultano molto piú frequenti di un tempo. Infatti, dai primi anni di scuola fino all'Universitá il numero di esami a cui gli studenti devono sottoporsi é enorme, e il loro futuro puó in gran parte essere determinato dal risultato di questi ultimi.

Nonostante queste situazioni siano per loro abituali, gli studenti non si sentono a proprio agio al momento di essere valutati, e questo dato puó rispecchiarsi nell'alta percentuale di studenti che manifesta un elevato livello d'ansia d'esame. D'altro canto, studi psicologici hanno dimostrato l'effetto negativo che molte volte l'ansia esercita sui risultati scolastici.

Lo stile attributivo é stato ampiamente studiato in relazione all'impotenza appresa e alla depressione, ma risultano carenti ricerche che ne studino le correlazioni con l'ansia da esame. In questa linea di ricerca bisogna sottolineare il lavoro di Arkin, Kolditz & Kolditz (1983) i quali trovano che questi studenti tendono ad attribuire il fallimento alla mancanza di abilità (cioé a fattori interni e stabili) e il successo a caratteristiche comportamentali come lo sforzo (cioé a fattori interni e instabili). Leppin, Schwarzer, Belz, Jerusalem & Quast (1987) e Bandalos, Yates & Thorndike-Christ (1995) trovarono lo stesso stile attribuzionale in relazione all'insuccesso; tuttavia il successo era attribuito a fattori esterni come il caso. Quindi i risultati ottenuti circa la relazione esistente fra ansia d'esami e stile attributivo non sono esaustivi.

A causa dell'importanza di questo tema da un punto di vista teorico e clinico, stiamo sviluppando una linea di ricerca che possa chiarire l'interazione esistente fra ansia, stile attributivo e rendimento accademico.

Metodo

1. Campione

Il campione é constituito da 141 soggeti, 73 maschi e 68 femmine, di etá compresa fra i 15 e i 18 anni (etá media=16.8) provenienti da diversi centri scolastici di Madrid.

2. Strumenti di misura

Gli strumenti di misura che abbiamo utilizzato sono:

a) Inventario de Situaciones y Respuestas de Ansiedad -ISRA- (Miguel Tobal & Cano Vindel, 1986, 1988, 1994). Questo strumento offre una misura delle tre componenti dell'ansia (cognitiva, fisiologica e motoria), del tratto generale d'ansia, e la misura di quattro fattori specifici (ansia di prova, interpersonale, fobica e quotidiana).

b) Test Anxiety Inventory -TAI- (Spielberger, 1980). Offre una misura del livello d'ansia nella situazione d'esame. Apporta punteggi in due fattori: worry ed emotionality e nel livello generale d'ansia di fronte alla situazione d'esame.

c) Scala KASTAN (Kaslow, Alloy, Abramson & Seligman, 1980). Questa scala studia lo stile attributivo attraverso tre componenti: locus of control, dimensione stabile-instabile, dimensione globale-specifico sia di fronte a situazioni positive (relazionate al sucesso) sia di fronte a situazioni negative (relazionate all'insuccesso). Offre una misura dello stile attributivo del successo, dell'insuccesso e un punteggio totale.

E' anche stato valutato il rendimento dei soggetti tramite il voto medio ottenuto negli esami del primo trimestre.

3. Procedimento

Le prove sono state somministrate nell'arco di due giorni; nel primo giorno sono stati somministrati il TAI e l'ISRA; nel secondo il KASTAN ed é anche stato valutato il rendimento.

Risultati

Dopo aver raccolto i dati, sono state calcolate le medie e le deviazioni standard di tutte le variabili studiate, cosí come le correlazioni esistenti fra di loro.

a) Relazione fra ansia e rendimento accademico

I risultati incontrati indicano l'esistenza di una correlazione significativa e inversa fra ansia da esame e rendimento accademico ($r_{xy}=-.22$, $p< .01$). Fra le due componenti principali dell'ansia da esame, la componente cognitiva mostra una correlazione significativa e negativa con la media dei voti accademici ($r_{xy}=-.31$, $p<.001$) mentre il fattore fisiologico non correlaziona con il rendimento.

Le altre variabili analizzate (ISRA) non indicano correlazioni significative.

b) Relazione fra ansia e stile attributivo

Nel presente studio si é riscontrata una correlazione non molto elevata, peró significativa, fra attribuzione dei successi negativi con fattori interni, globali e stabili (como la capacitá di riuscire) e l'ansia da esame, tanto nella misura del tratto ($r_{xy}=.18$, $p<.027$) quanto nel fattore cognitivo ($r_{xy}=.19$, $p<.022$). Tuttavia non abbiamo rilevato una relazione fra lo stile attribuzionale per i successi positivi e l'ansia da esame. D'altra parte c'é da dire che lo stesso stile attributivo si trova associato al tratto generale d'ansia ($r_{xy}=.17$, $p<.042$), alla sua componente cognitiva ($r_{xy}=.17$, $p<.045$), ed all'ansia quotidiana ($r_{xy}=.18$, $p<.031$).

c) Relazione fra stile attributivo e rendimento accademico

L'unica correlazione che raggiunge la significativitá statistica é quella che esiste fra lo stile attributivo dell'inssucesso e il rendimento accademico ($r_{xy}=-.22$, $p<.01$). Questa correlazione é negativa e indica che quanto maggiore è la tendenza ad attribuire il fallimento a fattori interni, stabili e globali, come ad esempio l'abilità, tanto minore sarà il rendimento dei soggetti.

Conclusioni

Lo studente con ansia da esame tenderà a mostrare un'alta ansia davanti a situazioni nelle quali si valutano la sua capacitá, come parlare in pubblico o una intervista di lavoro. La consistente relazione esistente fra ansia d'esame e ansia nella vita quotidiana evidenzia le ripercussioni che possono darsi nella vita dello studente quando i suoi livelli d'ansia di fronte agli esami sono molto elevati.

Il rendimento accademico conserva solo una relazione specifica con l'ansia d'esame. Quindi per conoscere l'effetto che l'ansia sta esercitando sul rendimento accademico risulta di maggior utilitá adoperare prove specifiche relazionate con la situazione di performance che stiamo valutando.

La tendenza negli studenti con alta ansia d'esame ad attribuire i successi negativi a fattori interni, stabili e globali, come evidenziato nel nostro studio, ricopre una grande importanza per diversi motivi: in primo luogo, indica una inclinazione dei soggetti a selezionare l'informazione collegata con la minaccia e interpretarla in maniera negativa. In secondo luogo, questo stile attributivo puó spiegare in parte la tendenza all'abbandono degli studi, cosi abituale in questi tipi di studenti. In terzo ed ultimo luogo, la percezione di mancanza di controllo é fortemente associata all'impotenza appresa, che puó spiegare la sintomatologia depressiva che, molte volte, presentano gli studenti con ansia da esame.

Parole chiave; ansia, ansia da esame, stile attribuzionale, rendimento scolastico.

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