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ABSTRACT

This paper describes an ongoing treatment program based on a cognitive-attentional interpretation of text anxiety. The primary goal is to train students to eliminate self-relevant thinking, and increase task-relevant thinking, i.e., to turn their attention from the self to the demands of the external situation. Three studies are described. The first involved 16 university students in three treatment conditions (Task-Attending, Task-Attending and Relaxation Training, and Self-Attending.) Results indicate that training in task-attending, with or without relaxation training, was beneficial to students' anxiety levels. The second study involved 48 test-anxious third and fourth graders. Sixteen children were placed in a task-attending training group, another 16 were in a placebo treatment group while still another 16 were in a no-treatment control group. There was a reduction in test anxiety level for all groups, with the group given task-attending training showing the most improvement and the no-treatment group the least. The third study launched in Fall 1973 and continuing through Spring 1975 involves an ongoing project with university students, and examines effects of exposure to modeling video-tapes, and extensive task practice. The author believes test anxiety is only one aspect of a more general personality disposition of evaluation anxiety. (Author/HMV)

Test Anxiety and Self-Attention[1,2]

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The participants in this symposium are presenting theories and evidence regarding the effects that self-awareness has on cognitive performance, responsibility attribution, and therapeutic goals. For the past few years I have been working with test-anxious people, people who are prone to become intensely, painfully self-aware when under evaluative stress. Test-anxious people carry around with them a set of habitual, negative self-related thoughts, an unnecessary "do-loop" built into the cognitive system, readily triggered by the threat of evaluation. These thoughts may take a variety of forms; but most of them are of a self-deprecatory, worrying nature. In an evaluating situation, test-anxious people may worry about how they are doing, browbeat themselves for poor preparation, think about the time passing, worry about the consequences of doing poorly or how other people are doing, think about how tense and upset they feel, etc. Whatever form the thoughts take, they invariably are irrelevant to the task at hand and interfere directly with getting the task done. As a result, test-anxious people consistently perform more poorly on cognitive tasks given under evaluative conditions than do less anxious people (See I. Sarason, 1971, and Wine, 1971, 1973 for reviews).

Some of the other symposium participants have found that under certain conditions self-awareness may be beneficial to task performance and therapeutic goals. The apparent contradictions between their views and mine are due to two major factors. One is that test-anxious people comprise a small

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proportion of the general population, i.e., the upper 15-33% of score distributions on measures of test anxiety such as the Test Anxiety Questionnaire (Mandler & Sarason, 1952), the Test Anxiety Scale (I. Sarason, 1958), and the Test Anxiety Scale for Children (Sarason, Davidson, Lighthall, Waite & Ruebush, 1960). Indeed, persons scoring at lower levels on these measures respond to evaluating conditions in a manner opposite to that of highly test-anxious people, becoming more attentive to task variables and performing well. The second major factor lies in the nature of the self-awareness to which is being referred. The highly test-anxious person is locked into a habitual set of negative self-cognitions which takes him or her into the self, out of the task situation, away from coping with the here and now. The self-awareness which the less anxious person experiences when being evaluated most likely has to do with a veridical assessment of the adequacy of his/her responsiveness to current environmental demands.

The attentional analysis of the interfering nature of self-awareness in the evaluation-anxious person may appear contradictory to Duval and Wicklund's (1972) theory of objective self-awareness. In the state of objective self-awareness, the person is self-focused, views the self as an object and judges and evaluates the self against standards. Duval and Wicklund (1972) and other researchers (Liebling & Shaver, 1973) have found that heightening the state of objective self-awareness, through the use of devices such as mirrors or videotaping of behaviors, frequently improves cognitive task performance. These procedures are similar to the highly evaluative or "ego-involving" conditions used in test anxiety research. As noted, such conditions improve the cognitive performance of the bulk of the population, while only the performance of the highly test-anxious person is debilitated. The test-anxious person under highly stressful evaluative conditions appears to be

in a chronic state of objective self-awareness. The less anxious person seems able to respond freely to task demands and to shift readily to an evaluative assessment of the effectiveness of those responses.

My interpretation of the nature of test anxiety and its effects is clearly a cognitive-attentional one, partially stimulated by the work of Liebert and Morris and their colleagues (Doctor & Altman, 1969; Liebert & Morris, 1967; and Morris & Liebert, 1970). They have analysed anxiety into the two components of Emotionality and Worry. Emotionality or physiological arousal is consistently elicited among test-anxious people in testing situations. However, it is fleeting, confined to the evaluating situation, and does not consistently interfere with cognitive performance. It is the Worry or cognitive component which is stable and enduring, which triggers the emotional arousal, and which interferes directly with cognitive performance.

The importance of the cognitive component in test anxiety is supported by a review of the test anxiety treatment literature reported by Allen (1972), as well as by a large-scale study completed by Allen (1971). Test anxiety treatment has been largely guided by a unidimensional emotional arousal view of the nature of test anxiety, as exemplified by systematic desensitization procedures. In this treatment approach, anxious people are trained to relax in the presence of progressively more stressful imagined situations. The studies reviewed by Allen (1972) demonstrate that dealing solely with the emotional arousal dimension of test anxiety through systematic desensitization is insufficient to consistently improve cognitive performance, though students typically report reductions in anxiety level. Treatment approaches which combine systematic desensitization with procedures that deal directly with the cognitive dimension of test anxiety, e.g., study counselling, much more consistently improve cognitive performance.

In the remainder of this paper, I will describe an ongoing treatment programme based on a cognitive-attentional interpretation of test anxiety. Two studies have been completed; one is currently in progress. The primary therapeutic goal in each of the studies has been to train students to eliminate self-relevant thinking, and increase task-relevant thinking. i.e., to turn their attention from the self to the demands of the external situation. Paradoxically, this treatment inevitably involves training in self-awareness in the sense of learning to monitor one's thought processes, if only to make the simple discrimination between self - levant interefering thinking and appropriate task-relevant thinking.

The Treatment Programme

Study 1: The first exploratory study involved 16 university students in 3 treatment conditions, each composed of 6 hour-long group sessions. The nature of the conditions was derived from a strictly cognitive-attentional interpretation of test anxiety stated as follows:

> "An attentional approach is explicitly concerned with how the subject uses his task time--his cognitive activity, what he is thinking about and attending to... This approach implies little interest in autonomic arrousal per se. In this context, degree of arousal is irrelevant unless S is attending to his arousal (Wine, 1971)."

In Liebert and Morris' terminology, we were focusing on Worry rather than on Emotionality.

In the first treatment condition, labelled Task-Attending, students worked on a variety of tasks during the sessions. They were given instructions to inhibit self-relevant thinking and to maximize task-relevant thinking. They also viewed two videotapes which illustrated the interfering effects of self-relevant thinking and the positive effects of task-relevant thinking and behaving. A second treatment condition, Task-attending + Relaxation Training,

provided students with training in progressive relaxation, as well as training in task-attention. They also viewed the videotapes. A third condition, Self-Attending, was designed as a placebo control condition. These students worked on the same tasks in the same sessions as those in the Task-Attending conditions. However, their attention was directed introspectively to their feelings and self-relevant thoughts while working.

The dependent measures consisted of self-report anxiety questionnaires, the Achievement Anxiety Test (Alpert & Haber, 1960) and the Worry-Emotionality Scale (Liebert & Morris, 1967), as well as two cognitive performance measures, a digit symbol test (Brown, 1972) and the Wonderlic Personnel test (Wonderlic, 1961).

The major results are presented in Table 1. Multiple t-tests revealed that students in the Task-Attending condition improved significantly on all of the dependent measures, with the exception of the Worry-Emotionality scale, though reduction in Worry scores approached significance ($t=1.59$, $.10>p>.05$). Students in the Task-Attending + Relaxation Training condition improved significantly on the two performance measures, and on the AAT Facilitating Anxiety Scale. The students in the Self-Attending condition did not change significantly on any of the measures, though they showed nearly significant improvement in Wonderlic scores ($t+1.61$, $.10>p>.05$). Between condition comparisons by means of t-tests of the magnitude of change in the three conditions showed that students in the Task-Attending condition improved significantly more ($p<.005$) in Facilitating Anxiety scores than did those in either of the other two conditions. When compared to the Self-Attending group, the Task-Attending group showed nearly significantly more improvement ($.10>p>.05$) on the AAT Debilitating Anxiety Scale ($t=1.74$), the Wonderlic ($t=1.82$), and the Digit Symbol tests ($t=1.39$).

The Task-Attending + Relaxation Training group improved significantly more in Digit Symbol scores ($t=3.67$, $p<.005$), and nearly significantly more in Wonderlic scores ($t=1.35$, $.10>p>.05$) than did the Self-Attending group.

There was some suggestion that a shift from self to task-attending, indicated by improvement in cognitive performance, occurred quite early in the six sessions. Matched forms of the digit symbol test were administered in sessions 3 and 5, as well as pre and post-treatment. Highly significant gains in performance in both task-Attending groups were made from the pre-treatment to the session 3 test (Task-Attending $t=5.28$, $p<.005$, Task Attending + Relaxation Training $t=5.87$, $p<.005$). These gains were maintained, but were not improved upon. The Self-Attending students did not improve in any of the digit symbol test comparisons.

In sum, training in task-attending, with or without relaxation training, was beneficial to students' experienced anxiety levels and to their cognitive performance, while self-attending was not. It is especially interesting to note the improvement in cognitive performance resulting from task-attending training, as well as the increase in facilitating anxiety. Facilitating anxiety might be described as the ability to direct the energy and alertness associated with emotional arousal in a task-relevant manner.

Study 2: The second study in the series explored the effectiveness of cognitive-attentional training for use with test-anxious children. Forty-eight children in grades 3 and 4 were selected from the upper third of a score distribution of 193 children on the Test Anxiety Scale for Children (Sarason et al., 1960). Sixteen children were given Task-Attending training; 16 were in a placebo treatment group; and 16 were in a no-treatment control group. The three groups were roughly equal in I.Q., TASC scores,

and socio-economic level as indicated by paternal occupation. Two female therapists, an experienced one and an inexperienced one, were used in the study with each therapist conducting two groups in each treatment condition, and each group composed of four children. The treatment groups met for six twice-weekly hour-long sessions. The children were pre and post-tested in their regular classrooms with a general ability test, the IPAT Test of G (Cattell & Cattell, 1957), a brief reading test, the Gates-McGinitie Test of Speed and Accuracy (Gates & McGinitie, 1965), and the Test Anxiety Scale for Children (S. Sarason, et al, 1960). Unfortunately (?) it was not possible to examine academic performance as the school's academic records were entirely anecdotal.

The procedures used in the Task-Attending training condition were quite similar to those used in the attentional training conditions of the earlier study with university students. However, the training dealt directly with the Emotionality component of test anxiety, as well as the Worry component. As in the earlier study, the purpose of the condition was to train the children to attend fully to task-relevant variables while working on cognitive tasks. Informal observation in the earlier study suggested that self-instruction in relaxation is an excellent means of gaining control of one's attentional processes. Moreover, "when arousal becomes quite extreme, it is attentionally demanding (Wine, 1971, p. 100)". Thus we considered it important that the children learn to manage the unpleasant physiological side effects of anxiety. The children worked on a variety of tasks during the sessions, both individual and group tasks. The procedures involved some basic training in self-instructions generally useful in approaching tasks; i.e., "Find out what I'm supposed to do", "Read the instructions carefully", "Don't worry, just pay attention to the test". They were also given training in self-structuring of tasks and in progression through them in an orderly, systematic

fashion. Approximately 5 - 10 minutes of each 50-minute session were devoted to training the children to instruct themselves in simple deep breathing exercises. This kind of relaxation exercise was selected because of its demonstrated effectiveness in reducing physiological arousal (Wescott & Huttenlocher, 1961; Wood & Obrist, 1964; and Deane, 1964), the brevity and ease of teaching it to children, and its ready transferability to classroom situations.

The placebo treatment condition was designed to control for therapist contact and group interaction. In each session the children engaged in an imaginative activity, such as drawing pictures and telling stories about them, and making up plays and acting them out. No effort was made to direct the activities toward school or test-related material.

The basic data on the three outcome measures are presented in Table 2. They were analysed by means of repeated measures analyses of variance (Tables 3,4, and 5), and by appropriate post-tests. There were no significant differences on the therapist variable. Consequently the data was collapsed across this variable. There was no change in any group on the reading test. The single significant F ratio in the analysis of variance of TASC scores was for the Pre-Post variable ($F=41.53$, $p<.001$), indicating that there was a reduction in test anxiety level in the entire sample. Individual means comparisons indicated that the test anxiety levels of the children given Task-Attending training showed highly significant reduction ($F=14.27$, $p<.005$), children in the placebo condition improved as well but at a lower level of significance ($F=5.52$, $p<.05$), while the change in test anxiety scores of the no-treatment control group only approached significance ($F=4.06$, $.10>p>.05$). However, there were no significant differences in comparisons on the magnitudes of change between conditions. The single measure which yielded a significant

interaction (F=10.26, df=2/45, p<.001) between treatment condition and the Pre-Post variable was the IPAT Test of G I. Q. scores. Individual means comparisons revealed that the I.Q.'s of children given Task-Attending training improved at a highly significant level (F=17.61. df=1/31, p<.001), while those of children in the placebo group (F=.93, df=1/31, ns) and the Control group (F=.03, ns) did not. There was also a highly significant main effect (F=16.60,df=1/45, p<.001) for the Pre-Post variable: but this effect is mainly due to the large improvement in I.Q. scores among children in the Task-Attending condition.

The results of study 2, exploring the application of task-attending training procedures with children, are encouraging though somewhat equivocal. The test anxiety levels of children given task-attending training were significantly reduced and their cognitive performance, as indicated by I.Q. scores, was significantly improved. However, no improvement in reading performance was shown by any group. The test anxiety levels of children in the placebo condition were also significantly reduced; but their cognitive performance was not improved. The results suggest that attentional training procedures developed for university students show promise for adaptation for use with children. Moreover, there was no difference in the effectiveness of the experienced and inexperienced therapist in application of the training procedures.

Study 3: The first two studies dealt with test anxiety as a rather narrowly defined personality construct, restricted to the tendency to become tense and worried in cognitive testing situations. As I have worked with test-anxious people and examined the literature it has become increasingly clear that test anxiety is only one aspect of a more general personality disposition of evaluation anxiety. Though each person who is anxious about

one form of evaluation is not necessarily anxious about all others, the same basic debilitating process seems to be operating across all of the forms, i.e., a turning inward of attention to self-relevant thinking. As an example, we are all aware of people who simply "cannot" speak out in a group or classroom. These people talk continuously to themselves in a worried fashion, e.g., "I've got to say something", "But they'll think I'm stupid", "What's the matter with me?", etc. As a result, a good deal of what is going on is missed; and the person's thought processes are used in a self-defeating, interfering manner. The same analysis applies to socially anxious and speech anxious people as well as to most ineffective approaches to studying. Indeed, it may be that all paper and pencil measures of anxiety are tapping a central core of negative self-cognitions, which may be labelled evaluation anxiety. For example, persons who score high on Spielberger's Trait Anxiety Scale (1968), constructed as a measure of general anxiety, react anxiously only to conditions of evaluative stress, not of physical danger (Katkin, 1965; Hodges & Spielberger, 1966). As a result of the broadening of the construct of evaluation anxiety, the treatment research in which I am currently engaged is providing university students with training in dealing with a range of academic evaluating situations, rather than just testing situations as narrowly defined. These include classroom discussions, seminars, study and preparation time, as well as examinations.

The current study was launched last fall and will continue through the academic year of 1974-75. The research is designed to systematically examine the effects of two of the major treatment aids used in the first exploratory study completed with university students: (1) exposure to modeling videotapes, and (2) extensive task practice. To date, 25 second-year students have participated in the treatment and the major independent variable which has

been manipulated is presence or absence of modeling videotapes. Again, two female therapists, an experienced one and an inexperienced one, have participated in the treatment; and again, the treatment consists of six twice weekly group sessions.

The Modeling and No Modeling treatment conditions are identical with the exception of the presence or absence of the modeling videotapes. In the Modeling condition 5 videotapes are shown, one in each of sessions 1-5. They are designed to illustrate the interfering effects of self-attending worry and the positive effects of task-relevant thinking and behaving in a number of academic evaluating situations.

The treatment might be described as cognitive-attentional skills training with a strong "here and now" emphasis. The sole aim is to train students to attend fully to and respond appropriately to task-relevant variables in academic situations. There are several subgoals involved in reaching the major goal: (1) Students become aware of the interfering nature of worry, and learn to identify their own peculiar brand of "worry thoughts" or interfering thinking. This is accomplished through monitoring of thought processes during evaluation situations, either recalled or current. (2) Students learn means of reducing irrelevant thinking and increasing task-relevant thinking and behaving. We use Gestalt awareness exercises (Stevens, 1971) to train students to become aware of, and to attend appropriately to, the immediate present. We also provide training in specific skills for structuring and dealing with the academic situations of classroom discussions, seminars, studying and exam taking. (3) The students learn how to manage the unpleasant physiological side effects of anxiety by instructing themselves in Yoga-like deep breathing exercises. With respect to the latter, we make it quite clear that relaxation training is solely for the purpose of taking the edge of emotional arousal, not

to eliminate it. The aim is to help the students see arousal as appropriate in stressful evaluation situations, and to direct the energy associated with arousal in situationally appropriate ways, rather than toward self-examination. This approach is supported by reference to facilitating anxiety as defined and measured by the Achievement Anxiety Test (Alpert & Haber, 1960). (See Wine, 1974 for complete description of the training procedures).

We are collecting data on a number of dependent variables including the Achievement Anxiety Test (Alpert & Haber, 1960; the Worry-Emotionality scale (Liebert & Morris, 1967); the Spielberger Trait Anxiety Inventory (Spielberger, 1968); digit symbol tests (Brown, 1972); the Wonderlic Personnel Test (Wonderlic, 1961); and academic grades from year 1 to year 2. We will be collecting followup data on all of these measures this year. Unfortunately, we do not as yet have an adequate waiting-list, no-treatment control group; nor have we run a placebo treatment condition, so our data are only preliminary.

Table 6 presents the basic data on the dependent measures for the Modeling and No Modeling conditions, and Tables 7-13 the analyses of variance of these data. There were no significant effects as a function of the presence of absence of the modeling videotapes, though the impact of the training was highly positive overall. The students as a group improved significantly on the self-report anxiety measures of Facilitating Anxiety ($F=12.78$, $p<.005$), Debilitating Anxiety ($F=38.58$, $p<.001$), Worry ($F=32.88$, $p<.001$), and Emotionality ($F=29.12$, $p<.001$). The only exception was the general anxiety measure, the Spielberger Trait Anxiety Inventory, which was also the only measure to show a significant effect as a function of therapist. There was a significant Therapist X Pre-Post interaction ($F=15.30$, $p<.005$). The general anxiety level of students in the experienced therapist's groups was slightly, but not significantly reduced (Pre M=48.42, Post M=44.75), while the students

in the inexperienced therapist's groups showed a small, nonsignificant increase in general anxiety level (Pre M=45.85, Post M=44.75). The total sample also improved significantly in cognitive performance on the digit symbol tests ($F=13.33$, $p<.005$), as well as in academic grades ($F=10.01$, p .005). There was a significant effect ($F=4.59$, $p<.05$) for the Modeling variable on grades, with students in the No Modeling condition having higher grades overall. Improvement on the Wonderlic Personnel Test only approached significance ($F=3.30$, $.10$ $p<.05$).

The lack of appropriate control groups reduces the interpretability of these data. However, examination of the extensive test anxiety treatment literature indicates that test-anxious students in no-treatment control groups typically either show no improvement or deteriorate. A test anxiety treatment study reported by Meichenbaum (1972) included a no-treatment control group of University of Waterloo students, which improved in neither anxiety level nor cognitive performance. The University of Waterloo students in the Self-Attending placebo group of Study 1 did not improve significantly in either anxiety level or performance. Only two of the test anxiety treatment studies reviewed by Allen (1972) included placebo treatment groups. One of these so-called "placebo" groups (Allen, 1971) was labelled Attentional Focusing and involved procedures quite similar to those used in the Task-Attending condition of Study 1 in the series described here. The students in Allen's Attentional Focusing condition were second only to those given combined systematic desensitization-study skills training in their overall improvement in anxiety level and cognitive performace. The Attentional Focusing condition clearly was not a placebo treatment. Students in the other placebo treatment group in Allen's literature review (Prochaska, 1971) did not improve.

Though the data from Study 3 are midstream preliminary data, comparison with the literature suggests that Task-Attentional training procedures show a good deal of therapeutic promise for the modification of the anxiety and cognitive performance of test anxious students. Moreover, these effects are not dependent on therapist experience or the use of modeling videotapes.

Concluding Remarks

I have described the results of a series of treatment studies based on an attentional analysis of the nature of evaluation anxiety. The analysis states simply that evaluation anxious people do poorly in evaluating situations because their attention is focused inward on self-relevant thoughts, rather than outward on the demands of the evaluating situation. The results of the studies described here suggest that procedures designed to increase task-relevant thinking and inhibit self-relevant thinking reduce anxiety levels and improve the cognitive performance of both university students and children.

The treatment procedures devised to pursue this single therapeutic goal and organized within the context of the attentional theoretical model owe their origins to several quite differing therapeutic approaches. We have borrowed freely from the behaviour modification literature, especially those authors interpreting the effects of behaviour modification procedures as training in cognitive self-control skills (e.g., Goldfried, 1971; Land, 1969; Wilkins, 1971). We owe a good deal to Meichenbaum's self-instructional therapy approaches (Meichenbaum, 1972, 1973, 1974; and Meichenbaum, Gilmore & Fedoravicius, 1971), and are using self-instruction as a therapy aid. We have also used Gestalt awareness exercises and have utilized the Gestalt analysis of anxiety as the gap between now and the future, i.e., the evaluation-anxious person is out of the here and now, is not focusing on the

immediate situation. Less obvious perhaps are similarities to Glasser's (1967) reality therapy in our focus on the decision-making process, on active choices made among thoughts and behaviours in the immediate present.

The study presented by Liebling (1974) in this symposium suggests a therapeutic aid for examination in future research in evaluation anxiety. Jones and Nisbett (1972) presented an analysis of the differing attributions for the causes of behaviour made by actors and observers. Actors attribute their behaviour to changing situational circumstances, while observers attribute the behaviour to broad, enduring dispositions of the actors. The analysis extends to self-observation: Storms (1973) found that videotaping group discussions from subjects' own perspectives or from the perspective of an observer had similar effects. Subjects who viewed the videotapes from the observer's perspective were more likely to attribute causes for their behaviour to general personal dispositions than were subjects who viewed the videotapes from their own perspectives. Liebling's study supports this finding.

Evaluation-anxious people appear to be chronic self-observers, attributing causes for their poor performances to stable, negative personal dispositons of the sort, "I am stupid, inadequate, a failure". For example, Doris and S. Sarason (1955) found that highly test-anxious people were likely to blame themselves for a series of arbitrary failures on a task while less anxious people blamed situational variables. The tendency to be chronic negative self-observers suggests that videotaped playback of their behaviour from the perspective of an observer might increase this tendency and heighten their self-consciousness. In fact, I. Sarason (1968) has found that videotaped playback of behaviour was debilitating to test-anxious boys. These observations, combined with the actor-observer analysis, suggest that

videotaped playback of external situations from the visual perspective of the evaluation-anxious person, with a focus on the demands of the situation, may be therapeutically helpful.

In conclusion, the cognitive-attentional model is proving to be an interesting and useful one in guiding the treatment of evaluation-anxious people.

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Table 1

Pre-Post Anxiety and performance measures, Study 1

Treatment Condition		Anxiety Measures								Cognitive Performance Measures			
		Anxiety Achievement Test				Worry-Emotionality Scale							
		Facilitating		Debilitating		W		E		Wonderlic		Digit Symbol	
		M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
Task-Attending Training (n=5)	pre	16.00	2.35	37.40	3.12	12.80	6.39	11.80	6.90	23.60	6.66	54.60	12.44
	post	26.60	.61	30.00	.71	8.80	2.94	9.20	2.48	28.00	6.32	65.40	14.15
	t diff	20.78****		2.56**		1.59*		1.00		6.47****		2.34**	
Task-Attending Relaxation Training (n=5)	pre	22.20	2.63	31.40	6.88	10.40	6.28	10.20	5.21	25.20	6.72	51.80	12.03
	post	25.20	6.22	27.20	7.82	8.40	5.09	8.00	3.74	29.40	7.02	68.20	9.63
	t diff	2.13**		1.00		1.04		1.31		3.09**		12.73****	
Self-Attending (n=6)	pre	19.17	3.12	37.33	3.27	10.33	4.08	10.17	3.06	25.67	3.83	50.83	6.11
	post	21.50	3.27	35.33	4.23	9.17	3.43	9.67	3.77	27.50	5.28	54.17	6.49
	t diff	1.45		1.35		.89		.42		1.61*		1.10	

p values (1-tailed)

* .10>p>.05
** p<.05
*** p<.01
**** p<.005

Table 2

Children's scores on the dependent measures, Study 2

		Gates-McGinitie Reading Test		IPAT Test of G		TASC	
		M	SD	M	SD	M	SD
Task-Attending	pre	8.38	3.56	101.25	8.21	21.13	3.55
	post	9.63	3.89	105.88	11.06	15.50	6.60
Placebo	pre	7.88	2.74	98.69	11.57	21.85	3.64
	post	8.06	3.58	99.75	14.44	18.38	6.62
No Treatment	pre	9.69	3.75	102.25	11.90	20.50	3.76
	post	10.19	3.40	102.06	14.63	17.50	5.93

Table 3

Analysis of variance of TASC scores, Study 2

Source	df	MS	F	P
Between Ss				
A treatments	2	53.59		
Ss within groups	45	41.21		
Within Ss				
B Pre-Post	1	392.04	41.53	p<.001
AB	2	15.54	1.65	ns
BxSs within groups	45	9.44		

Table 4

Analysis of variance of IPAT IQ scores, Study 2

Source	df	MS	F	P
Between Ss				
A treatments	2	157.20		
Ss within groups	45	310.77		
Within Ss				
B Pre-Post	1	80.67	16.60	p<.001
AB	2	49.89	10.26	p<.001
BxSs within groups	45	4.86		

Table 5

Analysis of variance of Gates-McGinitie reading Test scores, Study 2

Source	df	MS	F	P
Between Ss				
A treatments	2	31.04		
Ss within groups	45	20.10		
Within Ss				
B Pre-Post	1	10.01		
AB	2	2.39		
BxSs within groups	45	9.37		

Table 6

Pre-Post anxiety and cognitive performance measures, Study 3

	Anxiety Measures										Cognitive Performance Measures					
	Anxiety Achievement Test				Worry-Emotionality Scale				Spielberger TAI							
	Facilitating		Debilitating		W		E								Grades	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
Modeling (n=9) pre	20.33	2.58	37.00	4.37	13.00	2.87	10.89	2.92	48.44	5.17	61.00	8.47	77.00	16.36	63.10	8.29
post	24.00	2.94	29.89	4.63	8.22	2.04	7.22	1.62	48.44	3.44	66.78	7.55	85.11	13.75	69.87	4.59
No Modeling (n=16) pre	20.88	3.02	36.44	3.52	11.31	4.51	10.31	3.93	46.31	3.29	56.25	11.16	75.06	27.95	70.30	6.03
post	25.19	4.20	29.63	6.07	7.56	2.47	6.50	1.70	44.75	3.23	61.00	9.46	77.94	23.82	72.71	6.24

Table 7

Analysis of Variance of the AAT Facilitating Anxiety scores, Study 3

Source	df	MS	F	P
Between Ss				
A Modeling	1	8.76		
Ss within groups	23	9.89		
Within Ss				
B Pre-Post	1	183.40	12.78	p<.005
AB	1	1.15		
BxSs within groups	23	14.35		

Table 8

Analysis of variance of the AAT Debilitating Anxiety scores, Study 3

Source	df	MS	F	P
Between Ss				
A Modeling	1	1.95		
Ss within groups	23	35.39		
Within Ss				
B Pre-Post	1	558.03	38.58	p<.001
AB	1	.23		
BxSx within groups	23	14.46		

Table 9

Analysis of variance of the Worry Scale scores, Study 3

Source	df	MS	F	P
Between Ss				
A Modeling	1	.81		
Ss within groups	23	18.80		
Within Ss				
B Pre-Post	1	146.65	32.88	p<.001
AB	1			
BxSs within groups	23			

Table 10

Analysis of variance of the Emotionality Scale scores, Study 3

Source	df	MS	F	P
Between Ss				
A Modeling	1	4.84		
Ss within groups	23	11.29		
Within Ss				
B Pre-Post	1	166.12	29.12	p<.001
AB	1	.12		
BxSs within groups	23	5.70		

Table 11

Analysis of variance of the Spielberger Trait Anxiety Inventory scores, Study 3

Source	df	MS	F	P
Between Ss				
A Modeling	1	95.59	4.00	.10>p>.05
B Therapist	1	.06		
AB	1	9.94		
Ss within groups	21	23.89		
Within Ss				
C Pre-Post	1	9.94	2.02	ns
AC	1	4.57		
BC	1	75.26	15.30	p<.005
ABC	1	.23		
CxSs within groups	21	4.92		

Table 12

Analysis of variance of the Wonderlic Personnel Test scores, Study 3

Source	df	MS	F	P
Between Ss				
A Modeling	1	239.04		
Ss within groups	23	1010.58		
Within Ss				
B Pre-Post	1	347.79	3.30	.10>p>.05
AB	1	78.79		
BxSs within	23	105.36		

Table 13

Analysis of variance of the Digit Symbol Test scores, Study 3

Source	df	MS	F	P
Between Ss				
A Modeling	1	319.33	1.58	ns
Ss within groups	23	202.03		
Within Ss				
B Pre-Post	1	319.33	13.33	p<.005
AB	1	2.99		
BxSs within groups	23	23.95		

Table 14

Analysis of variance of grades, Study 3

Source	df	MS	F	P
Between Ss				
A Modeling	1	290.30	4.59	p<.05
Ss within groups	23	63.30		
Within Ss				
B Pre-Post	1	242.73	10.01	p<.005
AB	1	54.72	2.26	ns
BxSs within groups	23	24.25		