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RATIONAL-EMOTIVE COUNSELLING AND SELF-INSTRUCTION TRAINING FOR TEST ANXIOUS HIGH SCHOOL STUDENTS

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Abstract

This study employed two experiments to determine the relative effectiveness of self-instruction training and rational-emotive counselling in alleviating test anxiety in high school students. In both studies, test anxious grade ten students were assigned randomly to either a rational-emotive counselling group, a self-instruction training group, or a placebo control group. Thirty students participated in Experiment One. Twenty students participated in Experiment Two. Results indicated that both experimental treatments in both experiments were more effective than the placebo control condition in alleviating test anxiety as indicated by scores on the Test Anxiety Inventory (TAI) and the State-Trait Anxiety Inventory (STAI). In Experiment Two, the experimental groups were superior to the control group on both self-report and performance measures (The Canadian Test of Basic Skills - CTBS), and the rational-emotive counselling group was superior to the self-instruction training group on the TAI-W and the CTBS-Reading subscales.

Résumé

Basée sur deux expérimentations, cette étude vise à établir l'efficacité respective d'une technique d'auto-instruction et de l'approche rationnelle-émotive en counselling en vue de réduire l'anxiété aux tests chez des étudiants de niveau secondaire. Dans les deux recherches, des étudiants de 10e année anxieux aux tests sont assignés de façon aléatoire à chacun des trois groupes suivants: a) counselling selon l'approche rationnelle-émotive, b) formation selon une méthode d'auto-instruction et c) placebo. Trente (30) étudiants participent à la première recherche et 20 à la seconde. Les résultats indiquent que les deux traitements expérimentaux dans chacune des deux recherches se sont avérés plus efficaces que la condition placebo à réduire l'anxiété aux tests telle que mesurée par le *Test Anxiety Inventory* (TAI) et le *State-Trait Anxiety Inventory* (STAI). A la deuxième recherche, les groupes expérimentaux furent supérieurs au groupe témoin tant aux mesures auto-descriptives qu'à celles de performance (*The Canadian Test of Basic Skills - CTBS*). Le groupe traité selon l'approche rationnelle-émotive s'est avéré supérieur au groupe formé à l'auto-instruction, et ce aux échelles TAI-W et CTBS-Reading.

This article is based upon a Master's thesis submitted to the Faculty of Education, Simon Fraser University, by the senior author. Requests for reprints should be directed to Jack Martin, Associate Professor, Department of Educational Psychology, Faculty of Education, The University of Western Ontario, London, Ontario, N6G 1G7.

The purpose of the two experiments reported here is to compare the relative effectiveness of rational-emotive counselling and self-instruction training for the alleviation of test anxiety experienced by high school

students. Many recent studies have been concerned with the relative effectiveness of various cognitive-behavioral interventions for test anxiety (e.g., Hahnloser, 1974; Holroyd, 1976; Leal, Baster, Martin, & Marx, 1981; Meichenbaum, 1972; Suinn & Richardson, 1971). These studies generally indicate that cognitive counselling procedures are as effective, or more effective, than behavioral counselling procedures in reducing test anxiety as indicated by changes on both performance and self-report measures. Most often, the cognitive interventions employed in such studies have combined aspects of both rational-emotive counselling and self-instruction training, sometimes with other self-control procedures thrown in for good measure (e.g., Goldfried, Linehan, & Smith, 1978).

Whereas both rational-emotive counselling (REC) and self-instruction training (SIT) emphasize the importance of self-statements and cognition in the maintenance of test anxiety, critical theoretical differences exist between the two approaches (see Rachman & Wilson, 1980). REC focuses on a set of core irrational beliefs across individuals, whereas SIT attends more to idiosyncratic thought patterns. Consequently, REC emphasizes the total destruction of maladaptive beliefs and the promotion of rationality in thought, leading to adaptive living in general. SIT emphasizes the development of adaptive, constructive alternatives to dysfunctional cognitions associated with specific problematic situations. In practice, SIT offers a more heterogeneous set of counselling strategies (containing elements of desensitization, modeling, and behavioral rehearsal). REC typically employs a combination of counsellor confrontation and disputation of clients' irrational ideas and behavioral assigments, usually given as homework.

It was hypothesized that both the REC and SIT approaches would be more effective in the treatment of test anxious high school students than a placebo control group. Since Fletcher (1979) previously has found SIT to be more effective in alleviating test anxiety than REC, and since SIT encompasses a more extensive range of counselling strategies, it also was hypothesized that SIT would improve students' self-reports of test anxiety and actual test performances more significantly than REC. Finally, one exception to the foregoing hypothesis was formulated. It was predicted that REC would improve students' self-reports of trait-like elements of test anxiety as measured by the STAI-Trait subscale (Speilberger, Gorsuch & Lushene, 1970) more than SIT. This prediction was based on Ellis' (1975) assertion that REC may have more generalizability across situations than other approaches.

Experiment One

Method

Setting and participants. Seventy-eight grade 10 students in a junior secondary school (grades eight to ten) volunteered to participate in the study. Students volunteered on the basis of information provided by the school counsellor and information contained in letters to parents for purposes of obtaining informed consent. The school housed approximately 800 students and was located in a middle-class, suburban community, 10 miles from a major Canadian city.

After screening to insure that participants evidenced measurably high levels of test anxiety specific to test situations and possessed adequate study skills, 41 students were selected to participate in the study. Random assigment of these students, with females assigned first to ensure equivalent composition by sex across groups, resulted in the following experimental and control group composition: 14 participants (five males, nine females) in the REC group, 14 participants (five males, nine females) in the SIT group, and 13 participants (six males, seven females) in the control group. Due to changes in school timetables and some attrition, complete pretest-posttest data eventually were available for 30 participants — nine (four males, five females) in the REC group, 12 (three males, nine females) in the SIT group, and nine (four males, five females) in the control group.

Instruments. Three *screening instruments* were used to ensure that participants were experiencing high levels of test anxiety (*Test Anxiety Scale*–Sarason, 1978) paired with low to moderate levels of general fear (*Fear Survey Schedule*–Wolpe, 1969), without impairment of appropriate study skills (*Study Habits Checklist*–Preston & Botel, 1967).

Four *dependent variable instruments* were employed to assess self-reported anxiety and performance in test situations. The self-report anxiety instruments used were the *Test Anxiety Inventory* (Spielberger, 1980), yielding scores for worry (W), emotionality (E), and total anxiety (T); the *State-Trait Anxiety Inventory –State Form* (Spielberger *et al.*, 1970); and the *State-Trait Anxiety Inventory–Trait Form* (Spielberger et al., 1970). Performance in test

situations was assessed by means of the reading comprehension and mathematics subtests of the *Canadian Test of Basic Skills* (King, 1982).

Design and procedures. The study employed a two factor mixed design with repeated measures on one factor. The three levels of the between subjects factor (treatment) were self-instructional training, rational-emotive counselling, and placebo control. The two levels of the within subjects factor (time) were pretest and posttest administrations of the dependent variable measures.

Volunteers scoring under 26 on the *Test Anxiety Scale*, over 211 on the *Fear Survey Schedule*, and below 96 on the *Study Habits Checklist* were excluded from the study. These "cutoff" scores were based on previous research (Leal, Baxter, Martin, & Marx, 1981) and on the premise that selected participants should be primarily test anxious rather than generally fearful, and that their anxiety should be divorced from study problems. Screening occurred four weeks prior to pretesting. Immediately prior to the counselling treatment phase of the study, all dependent variable instruments were administered to obtain pretest measures for all participants.

Following pretesting, all groups received eight 50-minute counselling sessions, spread over a 5-week period. A single session was held in weeks one and five, with two sessions occurring in each of weeks two, three, and four.

All counselling sessions were conducted by an experienced counsellor (seven years experience as a professional counsellor) who recently had completed graduate practicum courses in counselling psychology. The same counsellor conducted all eight counselling sessions for each of the three groups (REC, SIT, and attentional control), following detailed manuals that had been prepared for each treatment (Note 1). For each counselling session, these manuals specified a list of objectives, a guide for counsellor activities and skills, a plan for student activities, and a list of materials required. Several sessions were videotaped and observed to help ensure counsellor fidelity to the counselling procedures specified in the manuals. No major deviations from the procedures specified in the manuals were noted.

All dependent variable instruments were administered immediately following the counselling sessions in order to obtain posttest measures for all participants.

Treatments. The manuals for all group sessions were constructed to help insure parallelism across all treatments in terms of instructional activities/strategies employed (e.g., group discussion, counsellor presentations, written exercises, demonstrations), time allocated for different activities, and type and quantity of homework assigments.

The SIT group sessions (Wallace, 1983) were based on the work of Meichenbaum (1972). Anxiety was explained as a consequence of debilitating self-statements and thoughts before, during, and after test situations. Participants were taught to label emotional arousal, recognize debilitating thoughts/self-statements, and to replace dysfunctional self-statements with more facilitative self-statements.

The REC group sessions (Merrick, 1983) were based on Ellis' rational-emotive therapy (Ellis & Grieger, 1977). Anxiety was explained as a consequence of faulty, irrational belief systems. Participants were taught to recognize and dispute irrational ideas about tests, and to incorporate the process of rational thinking in test situations.

The placebo control group sessions were based on relationship enhancement activities derived from principles of nondirective counselling. Such activities, while perhaps necessary to most counselling interventions, have been shown to have minimal effects unless accompanied by more goal-directed intervention strategies (Rachman & Wilson, 1980).

Results

Cronbach alphas were calculated as an index of reliability for the three screening instruments using scores from all volunteers for both experiments described in this paper (n=109). The lowest alpha was .89. Alpha coefficients for the outcome measures were derived from participants in both experiments (n=50). Overall alphas on the experimental variables at pretest were: STAI-Trait, .85; STAI-State, .92; TAI-T, .93; TAI-W, .86; TAI-E, .87; CTBS-Reading Comprehension, .90; CTBS-Math, .85. Overall alphas on these same variables at posttest were: STAI-Trait, .87; STAI-State, .94; TAI-T, .94; TAI-W, .89; TAI-E, .89; CTBS-Reading Comprehension, .90; CTBS-Math, .90.

To test the adequacy of random assigment, one-way analyses of variance were computed among the experimental and control groups on the scores for all screening and pretest

dependent variables. All these analyses resulted in nonsignificant F ratios, confirming the adequacy of random assignment.

Table 1 reports means and standard deviations for the experimental and control groups on all dependent variables. Separate one-way ANOVAs were performed on the posttest scores for all variables to test for experimentally-induced between group differences. Following the hypotheses of the study, a priori tests associated with these ANOVAs contrasted the two experimental groups with the control group, and the two experimental groups with each other. These analyses revealed significant between group differences on three variables: TAI-T, $F(2,27) = 8.46$, $p < .01$; TAI-W, $F(2,27) = 11.91$, $p < .01$; and TAI-E, $F(2,27) = 3.92$, $p < .05$. A priori contrasts showed that the experimental groups scored significantly lower than the control group on each of these variables: TAI-T, $t(27) = 3.99$, $p < .01$; TAI-W, $t(27) = 4.69$, $p < .01$; and TAI-E, $t(27) = 2.65$, $p < .05$. There were no statistically reliable differences between the REC and SIT groups. [In interpreting these results, it should be noted that the likelihood of a Type I error is increased by calculating repetitive F scores on the same data for a sample - e.g., TAI-T, TAI-W, and TAI-E.]

Two-way ANOVAs (treatment x time) were conducted on the dependent variable scores to examine experimentally-induced changes from pretest to posttest. These analyses revealed no statistically reliable main effects for treatment. Significant interaction effects were noted as follows: TAI-T $F(2,27) = 6.48$, $p < .01$; TAI-W, $F(2,27) = 5,36$, $p < .05$; TAI-E, $F(2,27) = 6.22$, $p < .01$. Main effects for time were significant on the STAI-State, $F(1,27) = 17.22$, $P < .01$; TAI-T, $F(1,27) = 26.82$, $p < .01$; TAI-W, $F(1,27) = 12.88$, $p < .01$; TAI-E, $F(1,27) = 45.37$, $p < .01$; CTBS-Reading Comprehension, $F(1,27) = 13.36$, $p < .01$; CTBS-Math, $F(1,27) = 21.23$, $p < .01$.

Post hoc analyses of the statistically significant interaction data employed the Bonferoni t-test. Table 2 summarizes the results of these analyses. Statistically reliable

Table 1

Means and Standard Deviations for all Groups on All Dependent Variables in Experiment One

Measure	Treatment Group	N	Pretest $\bar{X}$	Pretest S.D.	Posttest $\bar{X}$	Posttest S.D.
STAI-State	REC	9	52.89	12.89	46.00	12.87
	SIT	12	57.75	10.83	44.58	14.07
	Control	9	56.74	11.90	51.11	11.36
STAI-Trait	REC	9	45.00	5.57	46.55	6.23
	SIT	12	44.92	9.34	42.17	7.48
	Control	9	40.15	7.15	40.67	7.19
TAI-T	REC	9	57.33	12.46	41.33	8.18
	SIT	12	60.50	12.00	46.33	8.67
	Control	9	57.67	12.05	57.44	8.72
TAI-W	REC	9	22.00	4.90	15.67	3.00
	SIT	12	22.83	5.39	18.08	3.37
	Control	9	22.00	5.61	22.89	3.18
TAI-E	REC	9	23.44	5.59	16.44	3.94
	SIT	12	25.83	5.94	18.50	3.94
	Control	9	23.22	5.07	21.90	4.67
CTBS-Read	REC	9	18.67	6.88	20.78	9.23
	SIT	12	16.25	6.79	21.00	7.06
	Control	9	20.00	6.78	23.00	8.80
CTBS-Math	REC	9	16.78	7.79	20.56	8.16
	SIT	12	14.50	5.11	18.25	6.34
	Control	9	15.11	7.15	17.00	6.33

pretest-posttest changes on TAI-T and TAI-E variables were obtained for both the SIT and REC groups. Only the REC group showed a statistically reliable pretest-posttest change on the TAI-W. The placebo control condition produced no statistically reliable pretest-posttest changes on any of the TAI variables.

Table 2

Summary of Bonferoni *t*-test Results for Experiment One

	TAI-T	TAI-W	TAI-E
REC	4.52*	3.70**	5.07**
SIT	4.66**	3.20	5.92**
Control	.63	.52	.96

K = 3
df = 27
*p < .05
**p < .01

Experiment Two

Method

Setting and participants. Thirty-one grade 10 students in a junior secondary school (grades seven to ten) volunteered to participate in the study. As in Experiment One, students volunteered on the basis of information provided by the school counsellor and information contained in letters to parents for purposes of obtaining informed consent. Approximately 550 students were enrolled in the school which was located in a middle class, suburban community, ten miles from a major Canadian city. This school was in a different community and school district than the school that participated in Experiment One.

Following screening procedures similar to those reported in Experiment One, 31 students were selected to participate in the study. Random assignment of these students, with females assigned first, resulted in the following experimental and control group composition: 10 participants (five males, five females) in the REC group, 11 participants (five males, six females) in the SIT group, and 10 participants (five males, five females) in the control group. Due to changes in school timetables and some attrition, complete pretest-posttest date eventually were recorded for 20 participants — seven in the REC group (three males, four females), seven in the SIT group (two males, five females), and six in the control group (two males, four females).

Instruments. The screening and dependent variable instruments employed in Experiment Two were identical to those used in Experiment One.

Design and procedures. The design of Experiment Two, and the procedures employed in conducting Experiment Two almost exactly paralleled the design and procedures in Experiment One.

The number of students who volunteered to participate in Experiment Two was too small to permit careful selection of participants on the basis of the "cutoff scores" on the screening instruments that were used in Experiment One. However, *t*-tests on participant scores on the *Fear Survey Schedule*, the *Test Anxiety Scale*, and the *Study Habits Checklist* showed no differences across the two experiments.

All counselling sessions were conducted by an experienced counsellor (six years experience as a professional counsellor) who recently had completed graduate practicum courses in counselling psychology. The counsellor was a different person from the counsellor who delivered the counselling sessions in Experiment One.

Treatments. With very minor variations due to different classroom settings and school timetabling, the experimental and control groups in Experiment Two received identical treatments to their counterparts in Experiment One.

Results

Reliability coefficients for screening and dependent variable measures appear in the report of results for Experiment One.

To test the adequacy of random assignment, one-way ANOVAs were computed

among the experimental and control groups on participant scores for all screening and pretest dependent variables. All the analyses resulted in nonsignificant F ratios except the analyses on the CIBS Reading Comprehension pretest scores, $F(2,17 = 3.99, p < .05$. A priori contrasts associated with this ANOVA revealed that the control group scored significantly lower than both treatment groups on this variable at $t(17) = 2.83, p<.05$).

Table 3 reports means and standard deviations for the experimental and control groups on all dependent variables. Separate one-way ANOVAs were performed on the posttest scores for all variables to test for experimentally-induced between group differences. Following the hypotheses of the study, a priori tests associated with the ANOVAs contrasted the two treatment groups with the control group, and the two treatment groups with each other. These analyses revealed significant between group differences on five variables: STAI-State, $F(2,17) = 5.51, p<.05$; TAI-T, $F(2,17) = 5.52, p<.05$; TAI-W, $F(2,17) < 8.75, p<.01$; CTBS-Reading Comprehension, $F(2,17) = 6.3, p<.01$; and CTBS-Math, $F(2,17) = 4.06, p<.05$. A priori contrasts showed that the experimental groups scored significantly lower than the control group on the three self-report measures in this group of five variables: STAI- State, $t(17) = 2.80, p<.05$; TAI-T, $t(17) = 2.86, p<.05$; and TAI-W, $t(17) = 3.3, p<.05$.

A priori contrasts also revealed that the experimental groups scored significantly higher than the control group on the two performance measures: CTBS-Reading Comprehension, $t(17) = 2.53, p<.05$, and CTBS-Math, $t(17) = 2.49, p<.05$. With respect to contrasts between the experimental groups themselves, the REC group scored significantly lower on the TAI-W, $t(17) = 2.57, p< .05$, and significantly higher on the CTBS-Reading Comprehension test, $t(17) = 2.49, p<.05$, than the SIT group.

Two-way ANOVAs (treatment X time) were conducted on the dependent variable scores to examine experimentally-induced changes from pretest to posttest. These analyses revealed statistically reliable main effects for treatment on the STAI-State,

Table 3

Means and Standard Deviations for all Groups on All Dependent Variables in Experiment Two

Measure	Treatment Group	N	Pretest $\bar{X}$	Pretest S.D.	Posttest $\bar{X}$	Posttest S.D.
STAI-State	REC	7	51.86	6.41	45.43	13.34
	SIT	7	48.43	10.33	34.86	9.89
	Control	6	56.67	12.01	55.33	9.41
STAI-Trait	REC	7	40.57	8.50	36.14	11.87
	SIT	7	44.57	11.02	39.57	8.34
	Control	6	44.83	7.14	42.00	9.45
TAI-T	REC	7	52.00	14.76	38.28	12.85
	SIT	7	59.43	7.74	48.57	10.01
	Control	6	57.00	12.95	59.33	11.07
TAI-W	REC	7	17.14	7.97	12.43	4.65
	SIT	7	22.43	3.99	18.86	4.38
	Control	6	23.00	3.74	23.17	5.04
TAI-E	REC	7	23.29	6.02	16.71	6.68
	SIT	7	25.00	3.27	19.86	4.09
	Control	6	22.33	7.92	24.33	4.93
CTBS-Read	REC	7	23.43	5.74	31.43	7.76
	SIT	7	18.14	4.41	22.86	5.81
	Control	6	13.17	3.92	19.17	5.35
CTBS-Math	REC	7	21.71	5.41	24.00	6.30
	SIT	7	17.57	5.38	19.28	5.50
	Control	6	15.33	4.84	16.00	2.19

TAI-W, and CTBS-Reading Comprehension, consistent with the results of the one-way ANOVAs just reported. One significant treatment by time interaction effect was noted, on the TAI-E, $F(2,17) = 3.89$, $p<.05$. Main effects for time were significant on the STAI-State, $F(1,17) = 7.72$, $p=.05$; STAI-Trait, $F(1,17) = 5.69$, $p<.05$; TAI-T, $F(1,17) = 5.28$, $p<.05$; TAI-W, $F(1,17) = 4.71$, $p<.05$; TAI-E, $F(1,17) = 5.81$, $p<.05$; and CTBS-Reading Comprehension, $F(1,17) = 49.96$, $p<.01$.

To clarify within group changes across time on the TAI-E interaction data, post hoc analyses using the Bonferoni *t*-test were employed. Statistically reliable pretest-posttest changes on the TAI-E were noted only for the REC group, $t(17) = 2.90$, $p<.05$.

Discussion

Results from the two experiments reported here strongly support the hypothesis that both REC and SIT interventions are more effective in the treatment of test anxious high school students than a placebo control group. In Experiment One, this hypothesis was supported for self-report measures of test anxiety only. In Experiment Two, this hypothesis was supported by results from both self-report and performance measures. Given the small size of the groups in Experiment Two, and resulting diminuation of statistical power, these results indicate particularly strong treatment effects.

The hypothesis that SIT would improve students' self-reports of test anxiety and actual test performance more significantly than REC, was not supported. On between group tests, REC and SIT dit not differ in Experiment One. In Experiment Two, REC produced superior results to SIT on the TAI-W and the CIBS-Reading Comprehension variables. Within group results (from post hoc analyses of interaction data) from Experiment One showed that both counselling strategies producted statistically reliable pretest to posttest changes on the TAI-T and TAI-E, but that only the REC group changed reliably on the TAI-W. In Experiment Two, within group results showed that the REC group produced a statistically reliable change on the TAI-E. On balance then, between group results from Experiment Two, and within group results from both experiments support REC over SIT with respect to the alleviation of test anxiety as indicated by the experimental measures employed in this investigation. These results stand in opposition to those of Fletcher (1979).

The final hypothesis, that REC would improve students' self-reports of test anxiety as measured by the STAI-Trait subscale more than SIT, was not supported. Neither of the experimental treatments significantly affected this variable.

Overall, results from the experiments in this study support earlier findings of the overall effectiveness of cognitive interventions in the treatment of test anxious high school students (Leal *et al.*, 1981). While some basis was apparent, especially in Experiment Two, for proponents of REC to argue superiority of their approach over SIT, a conservative interpretation of the overall pattern of results in the two experiments (particularly given the small sample sizes in the experiments) recommends caution in this regard at least until further research might confirm differential effects of REC and SIT on variables such as the TAI and the CTBS-Reading Comprehension.

One major implication of this study for counselling practice in schools is that significant amelioration in the test anxiety experienced by high school students may be achieved by trained counsellors working with structured curriculum packages developed from cognitive theories of adaptive client change.

Reference Note

1. Copies of the training manuals employed in the reported experiments may be obtained from Ronald W. Marx, Instructional Psychology Research Group, Faculty of Education, Simon Fraser University, Burnaby, B.C., V5A 1S6.

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