Efficacy of Rational-Emotive Behaviour Therapy on the Reduction of Test Anxiety Among Adolescents in Secondary Schools

Elizabeth Omotunde Egbochuku
Counselling Psychologist and Senior Lecturer Department of Educational Psychology and Curriculum StudiesFaculty of Education, University of Benin, Benin City and Assistant Dean School of Postgraduate Studies University of Benin
Benin City, Nigeria
E-mail: mamandidi@yahoo.co.uk
Tel: +234 803 7190802

Beauty Obodo
Counsellor, and the Provost Caleb Educational Institute 94, Aladelola Street Ikosi- Ketu Lagos State. Nigeria

Ndidiamaka Oyedoyin Obadan
Medical Doctor Nigerian Air Force Hospital (NYSC)
Benin City, Nigeria

Abstract

Test anxiety is an uneasiness or apprehension experienced before, during, or after an examination because of concern, worry, or fear. This study established the efficacy of Rational Emotive Behaviour Therapy on the reduction of test anxiety on identified test anxious students. The study was quasi experimental in nature. Two independent variables were involved in the study namely, treatment (2 types), and entry test anxiety level (2 levels). The independent variable of primary interest is the Rational Emotive Behaviour Therapy (REBT). Instrument used for assessment was Test Anxiety Inventory. Entry test anxiety level was studied. Total scores from pre-test anxiety inventory (TAI) were used to block subjects into groups with low entry test anxiety level, moderate entry test anxiety level and those with high entry test anxiety level. REBT was found effective in the reduction of test anxiety F = 22.751, df (1, 76). Entry test anxiety level was significant on the level of reduction of test anxious students; F= 83.566, df (1, 76). F-ratio of interaction of treatment by entry test anxiety level was 10.347, df (1, 76). It is recommended that REBT be used in the treatment of test anxious adolescents in schools.

Key words: Rational emotive behaviour therapy, Adolescents, Test anxiety, Counselling.

1. Introduction

1. 1

Test anxiety is an uneasiness or apprehension experienced before, during, or after an examination because of concern, worry, or fear. Almost everyone experiences some anxiety. Poor performance in test or examination could be as a result of lack of preparedness or just simply examination anxiety. It has been observed that people develop anxiety for examination and test generally. Whenever some

children become aware that examination or test is about to take place at a particular period, they just take ill. This according to Egbochuku (1999, 2000) is one of the reasons why guidance counsellors are needed greatly in the schools because cases like this are not medical cases, they could keep reoccurring. Fortunately, there is a great deal that the school can do to keep the anxiety from interfering with their students' performance. First, the school system needs the services of trained personnel who are full-time workers in the field of guidance and counselling. Second, it is important to know that students don't have to eliminate test anxiety entirely. It helps to be "up" for exams. The aim of school counsellors is to reduce the anxiety to a manageable level.

To reduce fear and anxiety and other emotional maladjustment problems, series of psychological theories have been propounded and used. These theories have embedded in them counselling therapies, which can be used in the treatment of emotional maladjustment in general and fear and anxiety specifically. Such psychological theories include Rational Emotive Behaviour Therapy (REBT), Systematic Desensitisation (SD), Psychoanalysis, Client Centred Theory, Alderian Theory, Gestalt Theory, and Transactional Analysis among others. Anxieties over examination situation are emotional problems, which if not attended to could result in neurotic difficulties (Adeola, 1987). Anxiety, in most cases, results to frustration and this is capable of affecting the totality of the individual as well as his/her personality (Omoluabi, 1993). To what extent then will the application of an appropriate counselling therapy enhance the reduction of test anxiety? Rational Emotive Behaviour Therapy (REBT) is a counselling therapy, which has been widely used in the management of maladaptive problems. The therapy focuses on uncovering irrational beliefs which may lead to unhealthy negative emotions and replace them with more productive rational alternatives. It has been widely used in the management of maladaptive problems (Morakinyo, 1982; Egbochuku, 1998).

1. 2 Theoretical Underpinnings of Rational Emotive Behaviour Therapy.

Albert Ellis introduced this approach to counselling and psychotherapy in 1962. This therapy was originally called Rational Psychotherapy but later became Rational Emotive Therapy (RET) and today, it is known as Rational Emotive Behaviour Therapy (REBT). Rational emotive behaviour therapy focuses on uncovering irrational beliefs which may lead to unhealthy negative emotions and replace them with more productive rational alternatives. Rational emotive behaviour therapy (REBT) opines that human beings are 'basically hedonistic' in nature, in the sense that they strive to remain alive to achieve some degree of happiness. In addition, it also holds that humans are prone to adopting irrational beliefs and behaviours which may stand in the way of their achieving their goals and purposes. Frequently these irrational attitudes or philosophies could take the form of extraneous dogmatic 'musts', 'shoulds', or 'oughts'; which may contrast with rational flexible desires, wishes, preferences and wants

1. 3 Philosophy and Concepts.

Ellis outlined some assumptions about human nature and the nature and genesis of their unhappiness or emotional disturbances.

(1) Human beings are uniquely rational as well as irrational. According to Ellis, rational thinking results in effectiveness, happiness and competence. That is when a person is thinking rationally, s/he becomes effective, happy and competent but irrational thoughts result in ineffectiveness, unhappiness and incompetence.
(2) Emotional or psychological disturbance – neurotic behaviour – is a result of irrational and illogical thinking. According to Ellis, emotions accompany thinking and thinking- is usually biased, prejudiced, highly personalized and irrational.
(3) Irrational thinking originates in the early illogical learning that individuals are biologically disposed towards and that they acquire more specifically from parents and culture.

(4) Human beings are verbal animals and thinking usually occurs through the use of symbols or languages. According to him, disturbed individuals perpetuate their state by internal verbalization of their irrational ideas and thoughts.

(5) Continuing state of emotional disturbance resulting from self-verbalizations are determined not by external circumstances or events, but by perceptions and attitudes toward these events that are incorporated in the internalized sentences about them.

(6) Negative and self-defeating thoughts and emotions must be attacked by a reorganization of perceptions and thoughts so that thinking becomes logical and rational.

(7) The presence of extreme philosophies can make all the difference between *healthy* negative emotions (such as sadness or remorse or concern) and *unhealthy* negative emotions (such as depression or guilt or anxiety).

1. 4REBT employs the 'ABCDE' theory

A = Activating event or experience.
B = Belief system of individual (which is either rational or irrational).
C = Consequence (emotional disturbance (ic) or adjustment (rc)
D = Disputable beliefs.
E = Effect of disputing irrational beliefs (cognitive (CE) and behavioural (BE)).

The ABCDE model is also used in reconditions of cognitive and behavioural therapy and it is also applied to clarify the role of mental activities or predispositions in mediating between experiences and emotional responses.

In addition to the ABCDE framework, REBT also employs three principal insights:

1 While external events are of undoubted influence, psychological disturbance is largely a matter of personal *choice* in the sense that individuals consciously or unconsciously *select* both rational beliefs and irrational beliefs at (B) when negative events occur at (A).

2 Past history and present life conditions strongly *affect* the person but they do not, in and of themselves, *disturb* the person; it is the individual's responses which disturb them, and it is a matter of individual choice whether to maintain the philosophies at (B) which cause disturbance.

3 Modifying the philosophies at (B) requires persistence and hard work, but it can be done.

In summary, REBT basic hypothesis then is that, our emotions stem mainly from our beliefs, interpretations and reactions to life situations. Through REBT clients learn skills that give them the tools to identify and dispute irrational beliefs that have been acquired and are now maintained by self indoctrination. The question then is: could this method be effective in the reduction of test anxiety among Nigerian secondary school adolescents?

2. Purpose of Study

This study specifically focuses attention on test anxiety as exhibited by Nigerian secondary school adolescents. Using counselling therapy under a laboratory condition, it is assumed that if the level of fear and anxiety were reduced, these adolescents would be able to live emotionally adjusted lives and consequently perform better in their academics. The purpose of this study therefore is:

To identify those students who are experiencing test anxiety in the target population, then subject them to treatment using Rational Emotive Behaviour Therapy (REBT); To create awareness on how effective REBT is in reducing test anxiety among adolescents. Sex has been found to affect test anxiety significantly (Makinde, 2000). Since this study is looking at the effect of REBT in co-educational schools, it is important that the issue of sex is considered along side so as to ascertain if treatment effect observed is as a result of sex interference i.e. sex by treatment interaction.

A student's locus of control can affect his/her response to issues of life especially academic issues. Students who are controlled internally have the attitude that if they are meant to pass a test, they will and as such may not experience test anxiety. Others feel they are not in control (external locus of control) and may be in the habit of going through test anxiety with symptoms such as rapid heart beat and sweating palms because they feel that whether they pass or fail they are not responsible for this (McCombs 1991). Since locus of control has been found to be an important component of students' academic motivation, it is therefore necessary to find out if the effect of REBT will be affected by locus of control.

The establishment of a baseline before treatment is of paramount importance in behaviour modification (Akinboye, 1992). This gives direction to the study and helps the researcher in ascertaining if treatment is effective or not. Therefore the entry test anxiety level of subjects must be considered. This will help in the establishment of the baseline for this study and also show if it has any effect on the treatment and final test anxiety level of subjects. To guide the study, the following research hypotheses were formulated and tested.

3. Hypotheses

1) There is no significant difference in the test anxiety level of groups subjected to REBT therapy and Control after treatment.
2) There is no significant difference in the test anxiety level of groups with moderate and high entry anxiety level at the end of treatment.
3) There is no significant interaction effect of treatment by entry test anxiety level on test anxiety level at the end of treatment.
4) There is no significant difference in the test anxiety level of male and female subjects after treatment.
5) There is no significant difference in the reduction of test anxiety level of internally controlled subjects and externally controlled subjects at the end of treatment.

4. Method of the study

4.1.

This study was quasi experimental in nature. Four independent variables were involved in the study; namely, treatment (2 types), entry test anxiety level (2 levels), Locus of control (2 levels), and Sex (2 levels). The independent variable of primary interest is the Rational Emotive Behaviour Therapy (REBT)). Entry test anxiety level, Locus of control and Sex were used as moderator variables. Specifically, scores from Locus of control and entry test anxiety level were used as block variables. Scores from the locus of control were used to block the subjects into internal versus external while total scores from pre-test anxiety inventory (TAI) were used to block subjects into groups with low entry test anxiety level, moderate entry test anxiety level and those with high entry test anxiety level. However, research has shown that some element of anxiety is required for optimal performance by organisms (Campus Blues, 2003). This is the reason why this research did not consider those with low-test anxiety level. Also the Test Anxiety Inventory (TAI) specified that subjects whose score fall below 34.37 and 34.77 norm scores for Nigerian sample should be regarded as not having problems with test anxiety for males and females respectively. However, subjects who scored above the aforementioned score were then divided into two (2) groups of moderate entry test anxiety level and high entry test anxiety level with 34.48 and 34.78 to 49.99 as moderate and 50.00 and above as high. Of the remaining 2 independent variables, treatment was a manipulable variable with 2 types, which were Rational–Emotive Behaviour Therapy (REBT) and Control while Sex was used as a selection variable; selection in the sense that subjects was selected by sex (male and female). The study involved only one

dependent variable; namely, test anxiety level at the end of treatment. The dependent variable has two (2) components, worry and emotionality, but the study employed the total score. Therefore the dependent variable was used as a univariate.

The population of the study comprised all secondary school students in Lagos (South West area of Nigeria). Only co-educational senior secondary schools were used. The reason for this was to enable the researchers decipher between responses of males and females as regards test anxiety and to ascertain their interactive effect on treatment. The stratified random sampling technique was used for the initial selection of schools from the pool. three schools were randomly selected. The stratified random sampling was also used for the selection of the subjects into their various strata namely, entry test anxiety level (moderate and high), sex (males and females) A selection test, the Test Anxiety Inventory (TAI) was used in the determination of the initial selection. The second instrument was the Locus of Control Scale in Test Anxiety (LCSTA). The investigators had earlier established the psychometric properties of this scale during a preliminary study 0.65 was obtained.

4.2. Treatment Procedure

Administration of the instruments followed the steps below: -

1 Pre-treatment Assessment (pre-test)
2 Treatment
3 Post-treatment Assessment (post-test)

4.3. Pre-treatment Assessment

The main instrument used for assessment was Test Anxiety Inventory (TAI) originally developed by Spielberger (1980) but revalidated in Nigeria by Perafom Psychometric Centre (PPC) in 1997, and further revalidated by the researchers in 2004. The inventory was administered to the randomly selected sample intact classes. Responses were scored according to the specification on the TAI manual. Scores that are above the Nigeria norm (34.77 for males and 34.37 for females) indicate presence of test anxiety and scores below this show no problem with test anxiety. Only subjects with test anxiety were included in this treatment. These were then randomly assigned to the two (2) treatment groups. A sample of one hundred and twenty-five (125) subjects were randomly selected for this study, out of which eighty (80) were test anxious and these went through the treatment programme.

4.4. Treatment Programme

The treatment programmes are of two types:

1 REBT group
2 CONTROL group

The treatment took two sessions per week at 30 minutes per session. The whole treatment programme took twelve (12) sessions. In all therefore, six (6) weeks was spent for the treatment programme. The last session was only used for the evaluation of the total programme and the post treatment assessment. REBT therapy was not applied to the control group. They were only exposed to career opportunities within their localities.

4.5. Data Coding and Statistical Procedure

The data generated from the experiment was analysed by testing the five hypotheses formulated for the study. Following the scores of subjects at pre-test and post-test, it became important that subjects be grouped into the two levels earlier stated, forming the entry test anxiety levels. Therefore, all subjects who scored 34.47 to 50.00 were considered as moderate test anxiety subjects and those above 50.00 were considered high-test anxiety subjects. In order to determine the effects of REBT and entry test anxiety level of subjects, data collected from the 80 subjects from the two treatment groups were

analysed using a two-way ANOVA (i.e. treatment versus entry level of test anxiety) for each level of the two levels of the dependent variable (test anxiety). Similarity among the two (2) treatment groups at pre-test was established

5. Results

In order to determine the effects of REBT on the test anxiety level of groups at the end of treatment, the following hypotheses were tested using test anxiety level as dependent variable.

HO_1: There is no significant difference in the test anxiety level of groups subjected to REBT therapy and control after treatment.

HO_2: There is no significant difference in the test anxiety level of groups with moderate and high entry anxiety level at the end of treatment.

HO_3: There is no significant interaction effect of treatment by entry test anxiety level on test anxiety level at the end of treatment.

Table 1: 2-way Analysis of variance on the reduction of test anxiety level based on treatment by entry test anxiety level, at the end of treatment.

Source	**SS**	**df**	**MS**	**F**	**Significance Probability**
Entry test anxiety level	3530.638	1	3530.638	83.566*	000
Treatments	961.214	1	961.214	22.751*	000
2-Way Interactions					
Entry test anxiety level Vs	437.172	1	437.172	10.347*	002
Treatments Error	3210.986	76	42.250		
Total	7846.988	79			

*Significant at 0.05

Table 1 shows a 2-way analysis of variance. Perusal reveals that, the F-ratio for the effect of entry test anxiety level was found to be 83.566 with df (1,76). This was significant at $p<0.05$. Similarly, the F-ratio for treatment groups was found to be 22.751 with df (1,76), which was also significant at $p<0.05$. The F-ratio of the interaction of treatment by entry test anxiety level was found to be 10.347 with df of (1,76) which was also significant at $p<0.05$.

Table 2: Distribution of Post-test Mean Scores on Test Anxiety Level by Treatment Groups and by Entry Test Anxiety Level.

Entry Test anxiety level	**Therapies**		**Total**
	Rational Emotive Behaviour Therapy	**Control**	
Moderate	39.9565 (23)	42.2500 (24)	41.1277 (47)
High	48.7059 (17)	60.5000 (47)	54.4242 (33)
Total	43.6750 (40)	49.5500 (40)	46.6125 (80)

Figures in parentheses represent number of subjects in the sub groups.

Table 2 shows the distribution of the post test mean scores of the variables under study at the end of treatment. The mean scores for the control groups were higher than the means scores for the

treatment groups at the end of treatment (39.95 Vs 42.25, and 48.70 Vs 60.50) respectively for respondents from moderate and high groups.

Thus, the three null hypotheses for test anxiety level and treatment were rejected. It is therefore concluded that:

5.1. Main differences in effects of therapies and secondary independent variables at the end of treatment.

Having found that treatment and entry test anxiety level have main effects on the test anxiety level of subjects at the end of treatment, it was decided to determine the main differences in effects of the two independent variables and the other two secondary independent variables at the end of treatment.

The mean scores after treatment were employed for this analysis. The following hypotheses were tested, using the post-test scores on test anxiety as dependent variables.

HO_4: There is no significant difference in the test anxiety level of male and female subjects after treatment.

HO_5: There is no significant difference in the test anxiety level of internally controlled subjects and externally controlled subjects at the end of treatment.

Data analyses for testing the above hypotheses are presented in the tables below:

Table 3: Distribution of Post-test Means on the differences in the test anxiety level of males and females after treatment.

Sex	Therapies		Total
	Rational Emotive Behaviour Therapy	Control	
Male	43.8947 (19)	49.4500 (20)	46.7436 (39)
Female	43.4762 (21)	49.6500 (20)	46.4878 (41)
Total	43.6750 (40)	49.5500 (40)	46.6125 (80)

Table 3 above reveals the mean scores of males and females after treatment. A careful observation shows that the mean scores presented in the cells above are quite close under each therapy, which indicates that there is no significant difference in the mean scores. This implies that there is no significant difference in the test anxiety level of males and females after treatment. Thus, the null hypothesis earlier stated on no significant difference in male and female subjects at the end of treatment is retained.

Table 4: Distribution of post-test means on differences in test anxiety level of internally controlled subjects and externally controlled subjects after treatment

Locus of Control	Therapies		Total
	Rational Emotive Behaviour Therapy	Control	
Internal	42.7368 (19)	48.7500 (20)	45.8205 (39)
External	44.5238 (21)	50.3500 (20)	47.3659 (41)
Total	43.6750 (40)	49.5500 (40)	46.6125 (80)

Table 4 above reveals the mean scores of internally controlled subjects and externally controlled subjects after treatment. A careful observation shows that the mean scores presented in the cells above shows slight difference. Looking at table 2, the F-value of 0.613 at df=1, 76 shows no significance at $p< 0.05$. This confirms no significant difference, which implies that even though slight difference was observed in the mean scores, this difference is not significant enough to be reckoned with. Thus, the null hypothesis earlier stated is retained.

From the discussions above, the following conclusions were made: -

(i) There is no significant difference in the reduction of test anxiety level of male and female subjects after treatment.

(ii) There is no significant difference in the reduction of test anxiety level of internally controlled subjects and externally controlled subjects at the end of treatment.

5.2. The interactive effects of the therapies and the secondary independent variables at the end of treatment.

In order to determine the interactive effects of treatment and three (3) secondary independent variables (Entry test anxiety level, Sex and locus of control), seven (7) interaction hypotheses were tested.

5.2.1Interaction of treatment by entry test anxiety level.

Null Hypothesis:

There is no significant interaction effect of treatment by entry test anxiety level on test anxiety level at the end of treatment.

Data analysis for testing the above hypothesis is presented in table 3 above.

Table 4 revealed that there was significant interaction effects of treatment by entry test anxiety level at the end of treatment $F = 10.347$ df (1, 76), $p< 0.05$. This implies that the difference on the effect of entry test anxiety levels was not the same across all levels of treatment. Similarly, the difference on the effect of treatment level is not the same across both levels of the entry test anxiety level. Table 3 which was on the distribution of mean scores after treatment also confirms this, since the mean scores are standing on their own, they are not close. Thus, the null hypothesis stated earlier is rejected and the alternative accepted. Therefore, there is a significant interaction effect of treatment by entry test anxiety level on the test anxiety level at the end of treatment.

6. Discussion of Results

The results are discussed in terms of the stated hypotheses which shall be discussed under three (3) sections:

(1) Effects of entry test anxiety level and intervention through REBT

(2) Effect of REBT and secondary independent variables on reduction of test anxiety level.

(3) Interactive effects of other higher variables and REBT on the reduction of test anxiety level.

6.1. Effects Of Entry Test Anxiety Level And Intervention Through REBT

The findings from the analysis indicated that entry test anxiety level and treatments were significant in their effects on the reduction of test anxiety level at the end of treatment. Both groups also were found to respond differently to treatment; therefore there was a significant difference in reduction of test anxiety level at the end of treatment. Further analysis revealed that there was a significant difference between the treatment group and control group on the reduction of test anxiety level at the end of treatment.

The findings stated above cover hypotheses 1 and 2, which indicated that the entry test anxiety level of subjects must not be over looked in the treatment of test anxiety. The understanding of the

entry test anxiety level of subjects will help the counsellor in setting the base line before treatment. This will also guide the counsellor in the determination of the trend of the treatment during the treatment sessions and at the end of the sessions. It will help the students and counsellor know the level of improvement attained so far. These findings are in line with Akinboye's (1992), findings on counselling procedure on treatment of psychological and emotional maladjustment. The findings also indicate that both high and moderate test anxiety subjects respond to treatment differently. Therefore, a single yardstick should not be used in determining how each individual will respond to treatment. This finding is in line with the concept of individual difference in psychology, which states that no two individuals are exactly alike. Every individual is a unique entity and must be treated as such (Afe and Egbochuku, 2001).

The findings of the hypotheses above simply imply that REBT is effective in the treatment of test anxiety. Results showed that REBT reduced the level of anxiety of subjects but the control group showed increase in the test anxiety level of subjects which means that if treatment is not applied when one is anxious there is the likelihood that anxiety will be on the increase.

For Rational Emotive Behaviour Therapy (REBT), a host of studies were compiled by Engles, et al (1993) and Lyons and Woods, (1991) in their meta-analysis report which examined the efficacy of REBT. Results indicate that REBT is useful for a large range of clinical diagnosis and clinical outcomes; REBT is equally efficient for clinical and non-clinical populations, for a large age range (9-70), and for males and females. In general, there is no difference in efficacy between individual and group REBT format; the higher the level of training of the therapist, the greater the results of REBT intervention; Increased numbers of REBT sessions correlate with better outcomes. Higher quality outcome studies have shown greater REBT efficacy/effectiveness.

A few studies have found little or no change in behaviour when rational emotive behaviour therapy was used (O' Brain and Fassinger, 1993).

6.2. Effect Of Treatment and Secondary Independent Variables on Reduction Of Test Anxiety Level.

Following the tested effect of entry test anxiety level on the final test anxiety level of subjects, further analysis was carried out on the other two secondary independent variables, which are sex and locus of control. These hypotheses include 3,4,6 and 7. While hypotheses 3 and 6 are centred on sex, hypotheses 4 and 7 are centred on locus of control.

Considering the hypotheses on sex, results of findings revealed that there was no significant difference between male and female subject in the reduction of test anxiety at the end of treatment. The analysis indicates that both males and females respond to treatment in the same way. In terms of test anxiety reduction, sex does not affect this. The above findings cancel out the general assumption that females tend to exhibit severe fear and anxiety more than their male counterparts in everyday life. The result of this research is corroborated by Seeley, et al (2004), who found no statistical significance between sex and anxiety levels when they carried out a study on anxiety levels and sex differences in social volley ball players. Other studies such as Kirkland (1971), confirms the above finding also though his work was primarily on reduction of fear and anxiety among elementary children.

However, a few researches conducted in this area have shown that there is a significant difference between males and females in their manifestation of fears and anxieties (Makinde, 2000). The result also showed that females manifest fears and anxieties at a greater degree in varying situations. Other studies, which indicated high female anxiety than their male counterpart, include Krane and Williams, (1994), Sewell and Edmondson (1996). Seeley, et al (2004) found that females show a higher math anxiety, which could result in lower self-confidence than their male counterparts.

The possible reasons for the difference in result of several previous findings on this subject could be looked at from the angle of sex stereotyping observed in the past. Issues on sex have been considered along the line of effects of sex stereotyping on the success of females. Most papers showed

that females lack motivation experiences very early in life (Ryan, Gheen and Midgley, 1998) and this is carried through the different stages of education. Though most of the works cited earlier were centred on mathematics performance (Walsh, Hicken and Duffy, 1999), but the gender differences observed was based on gender stereotyping (Spencer, Steele and Quinne, 1999). It is possible that this could have contributed to issues such as test anxiety and the differences observed in earlier studies.

Following the tested hypotheses which had to do with locus of control, results revealed that there was no significant difference in the reduction of test anxiety level between internal locus of control subjects and external locus of control subjects at post-test. This means that whether an individual is internally or externally motivated, it has no effect on the reduction of test anxiety level. They both responded to treatment in similar ways. Also there was no significant interaction effect of treatment by locus of control on the reduction of test anxiety level at post-test.

The above findings are in agreement with the works of Bwoks and Hounshell (1975), in respect of graded schools, which showed no significant effect i.e. differences in locus of control had no significant effect on subjects' responses, though this work was on science achievement. In most researches on this issue, achievement was considered along side locus of control. Most works in this area were mainly centred on locus of control and achievement. Very few of these considered test anxiety along side, this is an indication that more work is needed in this area of study.

6.3. Interactive Effects of Other Higher Variables and REBT on the Reduction of Test Anxiety Level.

Four other higher interaction effects hypotheses were tested but none was significant; these include hypotheses 8, 9, 10 and 11. Hypotheses considered interaction effect of treatment by entry test anxiety level by sex; interaction effect of treatment by entry test anxiety level by locus of control; interaction effect of treatment by sex by locus of control; and interaction effect of treatment by entry test anxiety level by sex by locus of control. All interaction effects were on the reduction of test anxiety level at the end of treatment.

The above findings can be discussed from different angles. First and foremost, it will be better to discuss findings along the lines of the variables concerned. These are the secondary independent variables, which are sex and locus of control. Considering analyses of results in the previous chapter, it is quite obvious that both variables neither showed any significant main effects nor interaction effects in all analyses (table 4.16). This simply implies that sex differences has no main effect and interaction effect on treatment regardless of the entry test anxiety level of subjects. Therefore, whether they are males or females they all responded to treatment in the same way. This is same with locus of control; whether they are internals or externals, they all responded to treatment in the same way regardless of their entry test anxiety level. Therefore a person's locus of control does not affect his/her response to treatment

As was earlier discussed in this chapter, the issue on sex differences has been tied up with early experiences, which stem from gender stereotyping (Spencer, et al, 1999; Ryan, et al, 1998; Walsh, et al, 1999). According to Orubu (2000), during the early part of the 20th century, education of girls in some part of the country was regarded with disdain. Some parents therefore sent their male children to school instead of females because it was believed that several sociological factors, e.g. pregnancy, could terminate their educational pursuit. The Free Primary Education scheme in the country brought education within the reach of many females of school age. It is possible that factors such as these were responsible for the differences observed in earlier studies (Krane and Williams, 1994; Sewell and Edmondson 1996). However, it should be noted that these studies did not consider interaction effects of the aforementioned variables.

Locus of control has been identified as one of the factors that affect academic performance of students. It was therefore assumed that since high test anxiety has effect on academic performance, Locus of control should have a significant main effect as well as a significant interaction effect on

reduction of test anxiety. However, results from the analysis reveal the contrary. Looking at the analysis, it is obvious that there are no significant main effects and interaction effects. McComb (1991) found a significant effect of internal locus of control on test anxiety. This difference may have been due to methodology or some underlying factors, which may have been peculiar to his study. Since limited works have been carried out in this area, this may be a fertile area for further researches.

Another area of focus is that of locus of control and sex. Analyses also reveal no significant interaction effects between these variables. However, earlier studies in the area revealed that internal locus of control in women is stronger than that in males (Teglasi, 1978) and that this locus of control is usually stronger in females when they are in competition with males than when in competition with their fellow females. However, Maccoby and Jacklin (1974), found females to be more dependent on teachers for emotional support and are more subject to suggestibility than male students. This shows external locus of control in females. Other studies are tied to the findings above, which means that there is no clear cut rule as to who is more internal and who is more external. This probably could be the reason why this study found no significant interaction effect between the two variables. Responses to treatment were not affected by these variables. Further studies in the area could be an eye opener in the subject matter.

The issue on entry test anxiety level has earlier been discussed and results reveal that this has a significant main effect on reduction of test anxiety. It also showed a significant interaction effect with treatments but showed no interaction effects with secondary independent variables. The importance of the establishment of a baseline before treatment commences in an experimental research cannot be overemphasized (Akinboye, 1992). However, the entry test anxiety level of subjects does not have any significant interaction effect with the secondary independent variables on treatment. This again is another area which requires further study. This therefore implies that though locus of control and sex have been found to affect academic performance, it does not automatically mean that they will equally affect test anxiety or the treatment of it. This is the beauty of research because it is able to unfold the hidden truth and create enlightenment.

In conclusion therefore, the main effects and the interaction effects of primary and secondary independent variables were examined and the entry test anxiety level as well as treatment showed both significant main and interaction effects. However there was no significant main and interaction effects found with secondary independent variables. All higher other interactions were found to be non-significant.

7. Summary and Conclusions

The study examined the effect of REBT on the reduction of test anxiety of Adolescents in Nigerian Secondary Schools. It also determined the effect of entry test anxiety level, sex as well as locus of control on the reduction of test anxiety.

The following were the findings: -

1) There is a significant difference in the reduction of test anxiety level of groups subjected to different therapies after treatment.
2) There is a significant difference in the reduction of test anxiety level of groups with moderate and high entry test anxiety level at the end of treatment.
3) There is no significant difference in the reduction of test anxiety level of male and female subjects after treatment.
4) There is no significant difference in the reduction of test anxiety level of groups with internal locus of control and external locus of control at the end of treatment.
5) There is a significant interaction effect of treatment by entry test anxiety level at the end of treatment.

Based on the findings of the study, the following conclusions are made: -

REBT is effective in the reduction of test anxiety. However, in considering test anxiety reduction, the entry test anxiety level is a very major variable. This will enable the counsellor set the baseline before treatment commences and to know the direction of effect of treatment. On sex effect, both males and females responded in similar manner to treatment, sex does not affect level of test anxiety. Both males and females are prone to test anxiety the same way. A person's locus of control does not determine how high or low his test anxiety level will be. Whether internal or external locus of control, they all respond to test anxiety as well as treatment the same way.

References

[1] Adeola, A.O. 1987. "The Effectiveness of the Relaxation Procedure in Anxiety Management". *Nigerian Journal of Educational Psychology*, 2 (1)pp 23 –29

[2] Afe, O. & Egbochuku, E. O. 2001. "Educational Psychology and Learning". Lagos, Tony Terry Prints.

[3] Akinboye J. O. 1992. "Behaviour Therapy and Other Treatment Strategies". Ibadan: Paper back Ltd.

[4] Bwoks, M. & Hounshell, P. B.1975. " A Study of Locus of Control & Science Achievement". *Journal of Research in Science Teaching*. 12 (2) pp 175-181.

[5] CampusBlues. Com 2002- 2004. "The University of Cincinnati, Test Anxiety" http://www.CampusBlues_com-Anxiety.htm Retrieved April 9, 2003.

[6] Egbochuku, E. O. 1998. "Differential Effectiveness of systematic Desensitisation and Rational Emotive Therapy in the reduction of Test Anxiety". *Journal of School of Languages*. II.(2) pp 38-50.

[7] Egbochuku, E. O. 1999 & 2000. "Fear and Anxiety in Children: Counselling Intervention". *Benin Journal of Educational studies*. 1 & 2. (1 & 2) pp 148-156.

[8] Ellis, A. 1977. "Reasons and Emotions in Psychotherapy". New York. Lyle Stuart.

[9] Engles, G. I., Garnefsky, N., & Diekstra, F. W. 1993. "Efficacy of rational-emotive therapy: A quantitative analysis". *Journal of Consulting and Clinical Psychology* 6,pp 1083 – 1090.

[10] Kirkland, M. C. (1971). "The Effects of test on students and schools". *Review of Educational Research*. 41 (4) pp 303-350.

[11] Krane, V., & Williams, J. 1994. "Cognitive anxiety, somatic anxiety, and confidence in track and field athletics: The impact of gender, competitive level and task characteristics" *International Journal of Sport Psychology*. 25 pp 203-217.

[12] Lyons, L. C., & Woods, P. J. 1991. "The efficacy of rational-emotive therapy: A quantitative review of the outcome research". *Clinical Psychology 7 Review* 11 pp 357-369.

[13] Maccoby, E. & Jacklin, C. 1974. "The Psychology of sex differences". Stanford: Stanford University Press.

[14] Makinde, B. O. 2000. "Behaviour modification strategies as a tool to reduce fears and anxiety in children and youth in Lagos State". *West African Journal of counselling and Psychotherapy*. 1 No. 2,4151.

[15] McCombs, C 1991. "Locus of control". Search Engine Index and V Bulletin V2.2.9 Jelsoft Enterprise Ltd. Allnurses.com.

[16] Morakinyo, A.1982. "Improving academic performance via anxiety reduction". *Nigerian Journal of Educational Psychology* 1 (1) pp 73 –83.

[17] O' Brain, K. M., & Fassinger, R. E. 1993. "A casual model of the career orientation and career choice of adolescent women". *Journal of Counselling Psychology*., 40, pp 456 – 469.

[18] Omoluabi, P. F. 1993. "Validation of test anxiety inventory for Nigerian samples". *Nigerian Journal of Basic and Applied Psychology*. 3 (1) pp 37-47.

[19] Orubu, A. O. 2000. "Non–Test Techniques of Student Appraisal (for Teachers and Counsellors)". Institute Education, Benin City.

[20] Peraform Psychometrics Centre (PPC) 1997; "Test Anxiety Inventory". ***TAI*** *Manual*. No. 7, PPC Nigerian Agency.

[21] Ryan, A. M. Gheen, M. H., & Midgley, C. 1998. "Why do some students avoid asking for help? An examination of the interplay among students' academic efficacy, teachers' social emotional role, and the classroom goal structure". *Journal of Educational Psychology*. 90, pp 528 – 535.

[22] Seeley, G., Storey, J., Wagner, D., Walker, C., & Watts, K. 2004. "Anxiety levels and gender differences in social volleyball players before and during competition in an Australian setting". Australian Catholic University.

[23] Sewell, D., & Edmondson, A. 1996. "Relationships between field position and pre-match competitive state anxiety in soccer an field hockey". *International Journal of Sport Psychology*. 27 pp 159-172.

[24] Spencer, S. J., Steele, C., Quinne, D. M. 1999. "Stereotype threat and women's math performance". *Journal of Experimental Psychology*. 35,pp 4 – 28.

[25] Spielberger, C. D 1980. "Test Anxiety Inventory". *Preliminary Professional Manual*, Palo Alto: Consulting Psychologists Press.

[26] Teglasi, H. 1978. "Sex-role orientation, achievement motivation, and causal attributions of college females". *Sex Roles, A Journal of Research*. 4, pp 381 – 397.

[27] Walsh, M., Hickey, C., & Duffy, J. 1999. "Influence of item content and stereotype situation on gender differences in mathematical problem solving". Sex Roles, *A Journal of Research*. 4, pp 510 – 539.