
Secondary School Students - Systematic Desensitisation Technique on Test Anxiety

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Abstract: *Test anxiety is an observable fact that many students usually encounter during tests. It is considered to be one of the most common and widespread emotions, with a large number of the student population suffering from its excessive and overbearing level. This study investigated the Effect of Systematic Desensitisation Technique in reducing Test Anxiety among secondary school students. Two research questions were posed and two hypotheses formulated to guide the study. The study is a quasi experimental research and employed a 2x2 factorial design pre test-post test experimental control group, comprising two groups (Experimental group and control) using one treatment group (Systematic Desensitisation Technique {SDT} . The population comprised all the secondary school students in Onitsha urban areas with test anxiety. A total of 75 students were selected from three schools using a standardised instrument titled "Test Anxiety Inventory". The instrument, Test Anxiety Inventory was administered to both the experimental group and the control group before and after treatments, making up the pre test and post test. The data relating to the research questions were analysed using mean scores.*

Keywords: *effects, systematic desensitisation technique, test anxiety students, counselling*

1. INTRODUCTION

1.1. Background to the Study

In India, especially in Anambra State, most students experience anxiety during tests. According to Nwankwo, Obi and Obi (2014), most students at the verge of entering for school tests are seen to exhibit some forms of anxiety, restlessness, trembling, fidgeting or panicking. This should not be the case, because tests are normal situations which one should not be afraid to participate in. Egbochukwu, Obodo and Obadan (2008) observed that many secondary school students usually feel uneasy, fearful and anxious as tests approaches; some even go to the extent of feigning sickness. This anxious state of emotion exhibited by students towards test-taking is what Spielberger (2005) has referred to as test anxiety, and it constitutes a serious academic impediment to students.

Ergene (2003) has defined the term „test anxiety“ as a scientific construct, referring to the set of phenomenological, physiological, and behavioural responses that accompany concern about possible negative consequences or failure at an examination or at a similar evaluative situation. Test anxiety has been considered to include physiological over-arousal, often referred to as "emotionality," along with dread, worry, and expectations of terrible failure (Ergene, 2003). Hence, Bufka, Barlow and David (2008) see anxiety as an emotional state in which people feel uneasy, apprehensive, or fearful. Spielberger (2005) explained test anxiety as an unpleasant state characterised by feelings of tension and apprehension, worrisome thoughts and activation of autonomic nervous system, when an individual faces an evaluative achievement-demanding situation. Test anxiety for the purpose of this study is defined as a psychological condition in which students experience intense fear, worry and concern during tests.

Anxiety influences test performance in substantial ways, some students would perform worse than their ability would otherwise allow. Students at all levels who suffer from test anxiety most often choose and pursue careers which may not fully challenge their cognitive abilities (Eugene, 2003). There is no doubt that these students need as much help as possible.

Test anxiety is a significant issue for counselling as can be evidenced by its volume of growing literature. In explaining the need to study test anxiety the researchers, argued that we live in a test-conscious, test-giving culture in which the lives of people are in part determined by their test performance. Test anxiety is frequently cited among other important factors at play in determining a wide array of unfavourable outcomes for students; these factors include poor cognitive performance, scholastic underachievement, psychological distress, and ill health (Zeidner,

2004). Test anxiety has been found to interfere with competence, both in laboratory settings as well as in true-life testing situations in secondary school or university settings (Zeidner, 2004). Hembree's (1998) study, based on 562 North American studies, has shown that test anxiety correlated negatively with a lot of socially accepted measures of school achievement and ability at both secondary school and university levels. People usually experience anxiety about events they cannot control or predict, or about events that seem threatening or dangerous; as a result of these, test anxious students tend to react with a strong view of threat, reduced feelings of being able to produce desired result, having a low opinion of self; expecting to fail, blaming others, and having a strong emotional reactions and arousal at every first sign of failure.

Anxiety over test situation is an emotional problem for many students, which if not attended to, could result in neurotic difficulties (Adeola & Adedipe, 2003). 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, 2003). To some people, the symptoms of anxiety can become so excessive that they make it difficult or even impossible for people to focus on a test. Symptoms such as nausea, sweating and nervousness are actually experienced as a result of such emotional problems.

Test anxiety reduction programmes have gained widespread acceptance, and are used as treatment for students and persons in different stages of education (Gregor, 2005). Literature exists that describes the process and outcome of test anxiety reduction programmes with students at different level (example, Segool, 2009; Lawani, 2011; Egbochukwu & Obadan, 2005 & Ergene, 2003) Some of these information has been presented as descriptive or anecdotal reports. Some of the treatments have been shown to be effective in modifying test anxiety levels of clients. However, most of the interventions are western-based. A number of studies such as Stober and Pekrun (2004), Sawyer and Hollis-Sawyer (2005), Standen (2005) and Gregor (2005), have also investigated the efficacy of interventions in reducing test anxiety among secondary school students. Though there have been positive results with most of the cognitive behavioural interventions, and relaxation skills; test anxiety issue among secondary school students still remains a distressing condition which ought to be rectified.

Systematic Desensitization is a behavioural technique for reducing anxiety. A methodological sound experiment-controlled research using the is needed to answer broad questions about the Effectiveness of this test anxiety reducing technique. Dubord (2011) & Bialas & Boon (2012) implore counsellors and other allied professionals to consider providing programs that could assist individuals, especially minority individuals, to view themselves in a positive manner. Such programmes, according to them, will go a long way toward reducing test anxiety and cultivating a positive academic atmosphere. In the field of psychology and counselling, there are numerous counselling therapies to enhance adaptive behaviours. These therapies are developed by psychologists and are geared towards the elimination of maladaptive behaviours such as fear, anxiety, neurosis, insecurity, and depression, among others. Systematic desensitisation technique is a good example of such.

In addition, social, cultural, gender and economic factors need to be considered in test anxiety intervention programmes. Sex has been found to affect test anxiety significantly (Makinde, 2000). Since this study looked at effect of the aforementioned techniques in co-educational schools, it is important that the issue of sex is considered alongside so as to ascertain if treatment effect observed is as a result of gender interference.

Although a good number of researchers such as (Berger,2005; Braver,2008 & Lawani,2011) have investigated the effects of different psychological techniques in reducing test anxiety, the problem still remain a source of worry and concern to many students, parents, counsellors, teachers, and others in the society. As at the time of this study, the researchers were not aware of any study that seek to determine the effects of Systematic desensitisation technique in reducing test anxiety among secondary school students that had been conducted in Onitsha urban areas, Anambra State. This therefore has necessitated this study.

1.2. Purpose of the Study

The main purpose of this study is to determine the Effects of Systematic Desensitization technique in reducing test anxiety among secondary school students. Specifically, the study intends to determine;

The effects of systematic desensitisation in reducing test anxiety among secondary school students.

Whether there is any difference in the effect of the treatment technique in reducing test anxiety among secondary school male and female students.

1.3. Research Questions

The following question served as a guide for the study:

How effective is systematic desensitization technique in reducing test anxiety among secondary school students?

What is the difference in the effect of the treatment technique in reducing test anxiety among secondary school male and female students?

1.4. Hypotheses

The following null hypothesis guided the study, and was tested at the 0.05 level of significance:

There is no significant difference in the mean post-test scores of students who received treatment using systematic desensitization and those in the control group

There is no significant difference in the mean post-test scores of male and female secondary school students who received treatment using systematic desensitization.

2. METHOD

The following processes were undertaken in carrying out the study.

2.1. Research Design

This study is a quasi experimental research. The study adopted a 2x1 factorial research design comprising 2 experimental groups and 1 treatment technique making 6 cells. Harrington and Harrington (2006) described a quasi experimental study as a type of experimental study that determines the effect of a treatment paradigm on a non randomised sample. Ali (1999) argued that a quasi experimental research design could be used in a school setting where it is not always possible to use pure experimental design which was considered as disruption of school activities. Many quasi experimental methods are available but the one that was used for this study was a non-randomised pretest-posttest and control group design

Table1. A Non randomised pre-test and post-test control group design

Group	Pre-test	Research condition	Post-test
Experimental (1)	O1	X1 (treatment)	O2
Control (2)	O1	¬X(Neutral interaction)	O2

Here, O1- stands for the pre-test that was given to all the students

X1 - Stands for treatment 1 (systematic desensitisation technique) which will be given to the experimental group 1.

¬X – stands for the Neutral interaction the researcher will have with the control group

O2 – stands for the Post-test which was given to both experimental and control group.

2.2. Area of the Study

The study was conducted in Onitsha urban areas of Anambra State. Onitsha is a city, with a river port on the Eastern bank of the Niger River in Anambra State, South Eastern India. Onitsha urban is divided into two Local Government areas; Onitsha North and Onitsha South. Onitsha urban is surrounded by neighbouring towns like Ogbaru, Idemili North (Nkpor, Ogidi, Obosi, Umuoji), Idemili South (Oba), Oyi (Ogbunike, Umunya, and Nkwelle –Ezunaka) and Anambra East (Nsugbe).

Onitsha, according to United Nations-Habitat, (2009) is said to be the most populous and rapidly expanding commercial and educational centre in Anambra State. Also, in the words of Okpala in UN-HABITAT (2009), Onitsha is an admirable and sought-after city", being one of the largest cities in India, and a major „centre of education“ with many famous secondary schools and has developed its own „intellectual climate“, that „manifested in numerous booklets (and pamphlets)“. Despite all these, the researcher has observed that examination misconduct and dropout

rate have been high in Onitsha, with many “miracle” centres set up to assist candidates in cheating during examinations. It is possible that test anxiety may have played a role.

2.3. Population of the Study

The population of this study is 1983 students. These comprised of all the senior secondary schools students (SS 1 & SS 2) from all the coeducational secondary schools in Onitsha urban areas with high level of test anxiety. The student population were identified through a pretest administration of test anxiety inventory (TAI). The students found high in test anxiety constitute the population. The students have been considered appropriate for this study because they are usually the ones experiencing test anxiety. There are nine co-educational senior secondary schools with a total student population of 3867.

2.4. Sample and Sampling Technique

The sample for the study is 75 students. This comprises all the senior secondary school (SS 1 & SS 2) students that were identified with test anxiety from 2 selected coeducational secondary schools. Three schools with the highest number of students with high level of test anxiety were the ones selected for this study from the pool of 9 coeducational secondary schools in Onitsha urban areas. The instrument, Test Anxiety Inventory was used for the identification of students with test anxiety problem. All the students identified with test anxiety were included in the study. The two schools with the highest number of students with test anxiety served as the experimental groups I and II respectively.

In Experimental group I, 36 students were identified with test anxiety problem while 39 students were identified to make up the Control. So, the actual participants for the study were 75 students.

2.5. Instrument for Data Collection

The instrument that was used for assessment is Test Anxiety Inventory (TAI) originally developed by Spielberger (1980) but revalidated in India by Omoluabi (1993), Perafom Psychometric Centre (PPC) in (1997), and further revalidated by some researchers in 2004 (Egbochukwu & Obadan, 2005). TAI has been adapted to Indian context and have been used extensively in India. The Test Anxiety Inventory (TAI) is a self-report psychometric scale which was developed to measure individual differences in test anxiety as a situation-specific trait. The test is one paged and contains twenty items (see Appendix). Based on 4-point rating Scale, ranging from 1 (almost never), 2 (sometimes), 3 (often) to 4 (almost always) (Spielberger, 1980). The respondents were required to indicate how frequently they experience specific symptoms of anxiety before, during and after examinations. In addition to measuring individual differences in anxiety proneness in test situations, the TAI subscales assess worry and emotionality as major components of test anxiety. All responses of the twenty items on the TAI combined to yield a total score. The TAI total score ranged from 20 – 80, with higher score indicating a higher level of anxiety. Anxiety scale reads;

Almost always = 4 points

Often = 3 points,

Sometimes = 2 points

Almost never = 1 point.

Therefore, the 20 items possible score were $4 \times 20 = 80$, $3 \times 20 = 60$, $2 \times 20 = 40$ and $1 \times 20 = 20$. Students that score 40 and above were included in the study.

2.6. Validation of the Instrument

The instrument, Test Anxiety Inventory (TAI) was originally developed by Spielberger in 1980 but revalidated in India by Omoluabi (1993) and Perafom Psychometric Centre in 1997. The researcher therefore adopted the TAI and did not have to do any validation.

2.7. Reliability of the Instrument

Good psychometric properties have been reported as regards the TAI. Coefficient alpha of 0.92, and higher have been reported for TAI total scores (Spielberger, 1980). Additionally, TAI has good internal consistency reliability

among samples of secondary school and university students. Coefficient alphas of 0.88 and 0.90 respectively have been reported for both male and female samples. Test score stability over 2-4 weeks test-retest interval ranged from 0.80 to 0.81 for TAI (Spielberger, 1980). The coefficients of reliability obtained from the Indian samples ranges from 0.73 to 0.79 (Omoluabi, 1993).

2.8. Method of Data Collection

All the senior secondary (SS1 & SS2) students from all the coeducational secondary schools were given the Test Anxiety Inventory to complete. The researcher and six well trained research assistants went round the secondary schools to distribute 1983 copies of the questionnaire. Each participant was met in the individual class and was given the instrument TAI to respond to the items. The researcher gave an introductory instruction on how to complete the questionnaire to the students. The nature of the student's responses and the purpose for which it will serve was clearly explained to the students. The researcher, with the research assistants properly assisted and guided the students on how to respond to the questionnaire. The questionnaire sheets were collected from the students immediately they were through responding to the items and handed to the researcher for collation and scoring.

Each response was scored according to the specification on the TAI manual. Scores that are above the India 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. This enabled the researcher to identify test anxious students with high level of anxiety. A special request was made to the school principal for provision of adequate and conducive classroom for the administration of the treatment. The rooms were spacious, well ventilated, clean and noiseless, and well-lighted, equipped with matching chairs/seats for the participants.

2.9. Experimental Training and Training Procedure

The researcher obtained the consent of the school principals for carrying on with the research. The experimental training took place at the schools. On training days, the participants stayed in a conducive classroom within the school building.

The training programme held for twelve sessions of treatment and 5 sessions of neutral interactions for six weeks. The senior secondary school students (SS1 & SS2) who participated in the study formed groups in their respective schools. Each of the schools with the highest number of students with high level of test anxiety constituted a group; one experimental group and one control group. The participants in the experimental groups were exposed to Systematic Desensitisation. They participated in eighteen one-hour sessions which were held thrice a week, for six consecutive weeks.

After six weeks treatment and neutral interaction, the Test anxiety inventory was re-administered on all the participants in both the experimental and control groups, and was regarded as the post-test. The post-test was collated and given to the researcher for analysis. The researcher determined the statistical difference between the experimental and control group scaled scores.

2.10. Control of Extraneous Variables

The researcher was very much aware of the possible effect of extraneous variables (gender, participant's mood, location, discrimination, method, and time of the day) which if not well controlled could have contaminated the study and possibly distort the findings. The researcher therefore adopted some measures to minimise and possibly control the distorting effects of such variables.

2.11. Application of the Experimental Treatments

The sample for the study was broken into two groups (1 experimental groups and 1 control group). Experimental group 1 was treated with the systematic desensitisation technique. The control group received no treatment, but rather a neutral interaction with the school guidance counsellor.

2.12. Experimental Bias

The researcher was aware of possible bias on the experimental group as against the control group which may negatively affect the study. To control this, while the experimental group was exposed to treatment packages, the

control group were exposed to group neutral interaction sessions with the counsellor. The treatment sessions were administered by the same researcher. Also, both the Experimental and Control groups took part in the same pre-test and post-test exercises.

2.13. Hawthorne Effect

The Hawthorne effect, according to Macefield (2007), is an experimenter effect whereby participants, in the study may exhibit a typically high levels of performance simply because they are aware that they are being studied, and hence changes in participants' behaviour during the course of a study may be related only to the special social situation, and social treatment they received. The researcher therefore put measures to avoid this from happening. This was done by;

Choosing different schools for the study like the schools presently being used by the researcher.

Ensuring that all emphasis was focused on the variables of study alone.

All the participants in the treatment group and those in the control group received the same encouragement gift of a pen.

Making sure that the students who participated in the pre-test, experimental group training and control group neutral interaction sessions are the ones that participated in the post-test; both the experimental and control group participants were treated equally, and the testing conditions were the same, except that the contents of the treatment packages differed as regards Experimental Group I and Group II, and control group was exposed to neutral interaction.

3. RESULTS

3.1. Presentation and Analysis of Data

Research question 1 How effective is systematic desensitisation technique in reducing test anxiety among secondary school students?

Table2. Pretest and Posttest Mean Scores of Students who received Systematic Desensitisation and those in the Control Group

Source of Variation	N	Pretest Mean	Posttest Mean	Mean Loss	Remarks
Systematic Desensitisation Technique	36	50.72	35.69	15.03	Effective
Control Group	39	51.26	46.08	5.18	

Norms = 34.54

The data contained in table 1 showed pretest mean score of 50.72 and posttest mean score of 35.69 with mean loss of 15.03 for the students treated with the systematic desensitisation technique; as against pretest mean score of 51.26 and posttest mean score of 46.08 with mean loss as 5.15 for the students in the control group, hence the systematic desensitisation technique was effective. But the posttest mean score 35.69 of the students treated was above the norm of 34.54.

Research Question 2

What is the difference in the effect of the treatment technique in reducing test anxiety among secondary school male and female students?

Pre-test Scores and Post-test Scores of male and female secondary school students

Source of Variation		Pretest Mean	Posttest Mean	Mean Loss	Remark
MALE	56	51.2679	40.4286	10.8393	
FEMALE	57	52.0351	36.5263	15.5088	
Difference in their mean loss				4.6695	

Table 3 indicates that with the mean loss of 10.8393 and 15.5088 for male and female students who received systematic desensitisation, there was a difference of 4.6695. This shows that the effect of systematic desensitisation in reducing test anxiety among secondary school students differ in terms of gender.

3.2. Null hypothesis 1

There is no significant difference in the mean post-test scores of students who received treatment using systematic desensitization and those in the control group.

Table 4. ANCOVA on the mean scores of students treated with Systematic desensitisation technique and those in the Control group.

Source of variation	SS	Df	MS	Cal. F	Crit. F	P ≥ 0.05
Corrected Model	2145.000a	4	536.250			
Intercept	689.557	1	689.557			
Pre-test Scores	73.636	1	73.636			
Treatment Models	1826.031	1	1826.031	63.487	3.98	S
Error	2013.347	70	28.762			
Residual	130808.000	75				
Corrected Total	4158.347	74				

P<.05

Table 4 showed that at the 0.05 level of significance, 1 df numerator and 74 df denominator, the calculated F 63.49 was greater than the critical F 3.98. Therefore, Systematic desensitisation technique was significant in reducing participants' test anxiety.

3.3. Summary of the Findings

From the analysis, the following findings were made:

Systematic desensitisation technique was effective in reducing the students test anxiety.

Systematic desensitisation technique was significant in reducing test anxiety among secondary school students.

There was no significant difference in the mean scores of male and female students exposed to Systematic desensitisation treatment technique in reducing test anxiety among secondary school students.

4. DISCUSSION ON THE FINDINGS

Findings from this study are discussed under the following sub-headings:

4.1. The Effectiveness of Systematic Desensitisation Technique

Findings from the data analysed indicated that systematic desensitisation technique is effective in reducing test anxiety among secondary school students. This result supports the earlier findings by Egbochukwu and Obodo (2005) that the systematic desensitisation (SD) treatment is effective in reducing the test anxiety level at the end of treatment.

The finding from the study also is in line with some other studies (Brink, 2008; Bishop, 2007; Cherry, 2012; & Science Direct, n.d) indicating that systematic desensitisation is effective in treating test anxiety and other forms of phobias.

4.2. Conclusions

The study investigated the effectiveness of systematic desensitisation technique in reducing test anxiety among secondary school students. This study confirms previous research that demonstrated the positive effect of systematic desensitisation technique for various behaviours exhibited by test-anxious students.

The following conclusions have been drawn from the study:

That Systematic desensitisation is an effective treatment technique in reducing test anxiety among secondary school students.

The effectiveness of systematic desensitisation is significant in reducing test anxiety among secondary school students.

There is no significant difference on the effectiveness of systematic desensitisation in reducing test anxiety among male and female secondary school students.

The effect of test anxiety on secondary school students cannot be over-emphasised as many authors and researchers reviewed have observed. This study therefore is imperative and the finding much valuable.

4.3. Implications of the Study

The findings from this study have implications for counselling practice. There is evidence that the intervention techniques; systematic desensitisation technique is efficacious in reducing test anxiety among secondary school students. In the light of this, there is need for guidance counsellors who are working to improve the students' test performance and classroom behaviours of their students to familiarise themselves with the intervention technique used in this study and apply it in the behavioural change counselling activities.

Therefore, efforts must be geared towards ensuring that practising counsellors as well as those in training acquire and employ skills-involving intervention techniques when dealing with students.

4.4. Recommendations

Based on the findings of this study, the following recommendations are hereby made:

Systematic desensitization technique should be adopted by school guidance counsellors and other allied professionals as an effective treatment helping test-anxious students and for promoting students' academic performance in schools. In enhancing academic achievement and mental health in school setting, support strategies such as educational guidance and counselling, teaching life skill programmes and psychotherapy should be promoted.

Counselling should be an integral part of any educational institution, especially at the secondary school level, in order to boost self-confidence and test-taking ability of the students. Relaxation techniques have time and again proved that they are adjunct to education in a number of ways; thus they have to be imbibed as a way of life, for many to overcome such problems as test anxiety.

Governments and school administrators should give adequate support to counsellors and teachers alike, by providing conducive environment and giving adequate incentives to boost counselling activities in schools.

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