


School-based intervention for academic stress management and school adjustment among industrial technical education students

Implications for educational administrators

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Abstract

Background: The high level of academic stress and maladjustment in the school environment led to this study to investigate the management of academic stress and school adjustment among university students using rational emotive behavioral therapy.

Methods: The study adopted a pretest-posttest control group design. A total of 97 students participated in the study and were measured using an academic stress scale and academic adjustment scale at 3 points.

Results: The results of the multivariate statistics indicated the improvement in the management of academic stress and academic adjustment among Industrial Technical Education students following their participation in the rational emotive behaviour therapy (REBT) treatment and those in the waitlisted control group (WCG) at 3 points. After the treatment, a second assessment shows that the REBT treatment had a significant effect on improvement in academic stress management and academic adjustment among Industrial Technical Education students and was subsequently sustained at follow-up assessment. It was also found that there is no interaction effect of groups and gender.

Conclusion: This study suggests that the reduction in academic stress and improvement in the academic adjustment were due to exposure to rational emotive behavioral therapy. Therefore, school counselors should reach out to students that experiencing a high degree of stress and maladjustment and assist them using rational emotive behavioral therapy.

Abbreviations: AAS = academic adjustment scale, ASS = academic stress scale, REBT = rational emotive behaviour therapy.

Keywords: academic stress, industrial technical education, management, rational emotive behavioral therapy, school adjustment

1. Introduction

The ideal roles of management in organizing, planning, and regulating human and material resources to achieve its goals have been obviously documented.^[1] Stress coping techniques were described by Uzoeshi^[2] as an essential action made by a person when confronted with circumstances that go beyond his or her degree of balance. It is crucial to handle stress well because improper management has shown negative effects on one's health, mental well-being, and academic achievement.^[3] In extreme circumstances, stress is adaptable and controllable. However, persistently high levels of stress might cause serious issues.^[4] Students who persistently experience stress in school

due to workloads may become sick patients in the university medical center.^[1] For example, a student may have so many assignments, tests, and posters to submit to a designated link or office at the same and load-shedding is frustrating the efforts. This situation is demanding, fatiguing, and stressful. Possibly, the student may suffer health-related problems.^[5] Many ailments have their roots in stress, particularly when it is intense and prolonged. Stress may have a key role in a number of disorders, and patients should be treated accordingly using therapeutic methods.^[5]

One of the experiences in a person's life that have physiological and psychological demands is academic life.^[6] According to recent studies, there are a variety of stressors that might

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affect university life, including academic pressure, social challenges, and personal problems.^[6] Numerous experts in the field of behavioral science have conducted in-depth research on stress and its effects.^[7,8] If stress is not properly managed, it can have both beneficial and bad effects on academic institutions.^[9,10] Altogether, stress may induce both beneficial and harmful effects. The beneficial effects of stress involve preserving the homeostasis of cells/species, which leads to continued survival.^[5] However, in many cases, the harmful effects of stress may receive more attention or recognition by an individual due to their role in various pathological conditions and diseases.^[5] However, the complex academic environment can occasionally cause serious physical issues in students' life,^[8,11] which tends to undermine the advantages 1 would anticipate from graduating from university. If the necessary stress management at the university is to be successful, these scholars' claims require attention. Such attention could explore and suggest how the students could manage and adjust to the academic environment.

Issues related to school adjustment are a great concern to researchers.^[12-14] This is a result of undesirable consequences manifesting and erupting in the day-to-day life of the adolescent youth.^[12] The term adjustment connotes studying in a well-organized and supervised school environment with a highly controlled timetable to students learn to manage their own time and make decisions in a more adult and responsible manner.^[12] Thus, this indicates that efforts of an individual to achieve a higher level of adjustment in various fields, school system inclusive, facilitates the acquisition of needs, desires, and fulfillment of individuals aspirations, especially among students.

Given this, researchers have remarked that well-adjusted students often value what they are learning and participate actively in classroom activities,^[13,14] achieving higher potential^[15] while those that are not properly adjusted on the other hand appear passive during school activities,^[15] finds it difficult in handling academic stress-related problems,^[16] experience low educational aspiration,^[17] mental unhealthiness,^[18] school failure^[19] and drop out of school.^[20] Previous studies equally remarked that adolescent with improper adjustment to academic environment and activities experiences loneliness,^[21] and poor performance.^[22] The following circumstances negatively affect the psychological, behavioral, and emotional responses of adolescents.^[22-24] In most cases, they lag behind in issues related to school activities and their failure to achieve the desired success at school heightens psychological morbidity and emotionality that predisposed the adolescent to commit all sources of vices including suicide^[23] if neglected.^[24]

In the same vein, the poor academic adjustment engenders serious psychological problems among adolescents.^[25] Remarkably, research has shown that unsolved academic-related problems like lower academic self-efficacy, improper time management, and higher test anxiety can lead to mental health issues which as well can affect academic performance retention and graduation rates.^[25] However, previous studies have reported the prevalence rate of adolescent psychiatric problems induced by academic poor adjustment across the globe.^[26-28] Malhotra and Patra^[26] reported over 23% among Indian students, above 37% was reported in Ethiopia^[27] and 26% prevalence was equally reported in Malaysia.^[28] These reports on the prevalence of stress in countries indicated that stress is a global issue that needs consistent efforts of researchers, suggesting possible treatment strategies to reduce the adverse effect. Enefu, Obaka, Okaforcha et al^[29] showed that the negative attitude exhibited by school-age Nigerian adolescents as a result of poor adjustment to school programme is on the increase. This ranges from, low academic achievement, violation of the school rules and regulations, lateness to school, and a nonchalant attitude to class and home assignments.^[29]

More so, evidence from prior studies has shown that poor academic adjustment could lead to laziness, absenteeism in school, negative feelings, attitudes, and cognitive and behavioral

characteristics.^[30,31] It equally led to withdrawal from peers, social gatherings, and drug addiction.^[27,32] In essence, it is the researchers' interest that students in Enugu state, Nigeria feels more satisfaction, accommodating, pleasure, happiness, success, and safe within their academic environments. Thus, the poor adjustment could endanger all aspects of adolescents' lives with it significant effect on their attitudes towards their abilities and academic achievement. Upon the prevalence of poor academic adjustment in Nigerian populations and its negative effect, it, therefore, becomes imperative to investigate if rationale emotive behavioral therapy could be useful in improving the students' negative perception regarding the poor adjustment.

In essence, students with irrational beliefs could be vulnerable to lower academic achievement, poor time management consciousness, and higher test anxiety which could lead to mental health-related problems, capable of affecting academic performance, future vocation, retention, and graduation rates. Given this, researchers have proposed using rational emotive behaviour therapy (REBT) to change faulty beliefs that may result in unhealthy behaviors by swapping them out for more useful ones.^[33] Thus, there are some existing studies on how to reduce the increasing effect of poor academic adjustment, but not on rational emotive behavioral therapy especially among university in Enugu State, Nigeria. Consequent upon this, the present researchers considered rational emotive behavioral therapy important as an intervention to help adolescents in inclusive schools with poor academic adjustment to improve in order to achieve self-goal-oriented life. Thus, poor academic adjustment in adolescents could be addressed using psychotherapeutic approaches like REBT.

Rational emotive behavior therapy created by Ellis^[34] is a comprehensive, active, directive, philosophically, and empirically based psychotherapy aimed at resolving emotional and behavioral problems and disturbances capable of depriving people of leading a healthier, happy, and fulfilled life.^[35] Thus, the basic assumption of the theorist is to use REBT to maintain, enhance and improve on academic wellness and eagerness of the adolescent. By the applications of REBT principles, rational thought is indirectly communicated courage is conceptualized and more adaptive behaviors are also introduced.^[36] In order words, the basic assumption is that adolescents with irrational beliefs will find it difficult to achieve reality which could result in higher test anxiety that may lead to mental health-related problems. Thus, an individual with an irrational belief is assisted by using such therapeutic intervention as REBT and best-practicing strategies to address the findings when such unrealistic and illogical thought capable of generating mental health problems is discovered.^[37] The consequences of unrealistic thoughts could be self-blame, academic procrastination, over-compulsiveness, avoidance, and withdrawal.^[38]

Irrational thought could arise when the adolescents presume that everyone should love and approve of me and incidentally they did not; I should be able to succeed always, and be on top of things and could not, I'm an inadequate and incompetent person; and People who are evil and bad should be punished severely and I have the right to get upset if they are not stopped and made to pay the price.^[39] To this, university students may experience frustration, distress, self-defeating, and low school turnout.^[40] Researchers have remarked that individuals with these belief systems could be described as having unrealistic and negative beliefs which show distortion of reality.^[41-43] Hence, the need for proper interpretation and representation of reality.^[44] REBT in this study, therefore, focuses on helping adolescents increase the levels of their adaptability with the introduction of a more rational and positive mindset concerning themselves, others, and the world.^[45]

Yahaya and Mustapha^[46] remarked that Rational-Emotive Behaviour Therapies are effective in reducing bullying behavior among in-school adolescents in Ilorin, Nigeria. The efficacy of REBT has been tested and shown to be effective in improving

and promoting the mental health and academic achievement of students in both low- and middle-income nations including Nigeria.^[47,48] Given the far comprehensive evidence of REBT, in treating mental health-related problems, the current study seeks to examine the effect of REBT on academic stress and school adjustment among Industrial Technical students in Enugu State, Nigeria. In this study, we hypothesized that school adjustment behavior among Industrial Technical students will be significantly improved and maintained at post-treatment and follow-up when exposed to rational emotive behavior therapy. Also, we hypothesized that academic stress among Industrial Technical students will be significantly reduced and maintained at post-treatment and follow-up when exposed to rational emotive behavior therapy.

2. Methodology

2.1. Ethical approval

The ethics and research committee of the Faculty of Education, University of the principal researcher approved this study. To comply with American Psychological Association established ethical principles and standards, the researchers sought the school management consent letter that authorized us to conduct the study among the students.

2.2. Design

The study adopted a pretest-posttest control group design.

2.3. Study participants

The participant includes 97 Industrial Technical Education students in Enugu state, Nigeria. The power of the sample size was determined using GPower 3.1 software.^[47] A priori power analysis gave a power of 0.80, the figure indicates that the sample size was adequate. With the Gpower statistical tool, the sample size was estimated, the parameter was 8.50 and the anticipated sample size was roughly 34 for between-group comparison. Kindly see Table 1 for the characteristics of the participants.

2.4. Measures

Academic adjustment scale is a 9- item instrument that measures the level of student's adjustment. The instrument was developed by Anderson, Guan and Koc.^[49] The aim is to validate a measure of the academic adjustment that could be suitable to use with all students. The items are sub-scale into 3; focus on academic life (e.g., I am enjoying the lifestyle of being a university student.);

concentrate on academic achievement while (e.g., I am satisfied with the level of my academic performance to date.); focus on academic motivation (e.g., I expect to successfully complete my degree in the usual allocated timeframe.). The academic adjustment scale is rated on a 5 likert scale options of 1 = Rarely applies to me; 2 = Occasionally applies to me; 3 = Neither does or doesn't apply to me; 4 = Sometimes applies to me and 5 = Always applies to me. The total score can range from 1 to 40, with higher scores indicating poor academic adjustment. In this study, we established the reliability of Cronbach's alpha = 0.81 coefficient of the scale in this study. The validity and reliability of the academic adjustment scale have been established across cultures and countries. for instance, in Switzerland academic adjustment scale (AAS) showed adequate reliability of .72.^[49] In Nigeria, Ikpe, Ezeonwumelu, Okoro, Udofia, and Akpan^[50] reported Cronbach's alpha coefficient of 0.72, In Argentina, Cronbach's alpha for the total score was 0.78.^[51]

Academic stress scale^[52] is a 40-item rating scale adopted to Indian conditions by Rajendran and Kaliappan^[53] by administering the adapted version of the Students' Academic Stress Scale. The scale measures the efficiency of behavioral strategies in managing academic stress in improving academic performance. Sample items included a) Teachers make too many extra demands on students; b) Lack of self-confidence c) Lack of concentration during study hours The scale has 4 response options "No Stress" to "Extreme Stress." Each response carries a score of "0," "1," "2," "3," and "4" respectively. In the Nigerian context, the scale was found to be reliable (0.79) for this study. França and Tatiane^[54] reported 0.83 reliability using Portuguese populations.

2.5. Intervention

The intervention manual utilized in this study is a school-based rational emotive behavioral therapy developed by the present researchers to help students with high academic stress and poor adjustment acquire how to use rational emotive behavioral skills and techniques in addressing and managing their mental health, emotions and behavior-related problems. Some rational-emotive and cognitive-behavior-related studies were reviewed which informed the present treatment manual.^[15,31,41] It is a psycho-educational programme that lasted for 12 weeks with 12 sessions. Each session lasted for 60mins. Precisely, each therapeutic session was conducted with different thematic activities. The techniques adopted were problem-solving skills, relapse prevention technique, modeling, bibliotherapy, behavioral rehearsal, coping self-statement and behavioral contingencies, et cetera.

2.6. Study Procedure

Prior to the commencement of this study, we officially informed and secured the permission and cooperation of the management of the schools in Enugu state where the study was carried out. The researchers further enlightened the management on the objectives of the study and what the students would benefit from if they fully participate. Thereafter, the researchers equally met with the students in their various classes and notify them about the study and invite them to participate in the study. The invitation to this study officially began on April 2, 2018, in Enugu state Nigeria, and lasted till May 2018. The participants were recruited through word of mouth and were assessed individually. The recruitment was strictly based on completion of the written informed consent form, indicating their interest to participate in the study, bearing in mind the eligibility criteria slated out for all that may wish to participate; must be readily available for the study; must be a secondary school student; and must have high AAS and academic stress scale (ASS) scores. We equally considered that any student who is taking an external examination, and

Table 1
Demographic characteristics of the participants.

Demographics	Treatment n/%	Waitlist Control %	χ^2	P
Gender				
Male	30 (62.5)	25 (51.0)	1.302	.254
Female	18 (37.5)	24 (49.0)		
Age				
5–10 Yrs	21 (43.8)	21 (42.9)	3.382	.184
11–15 Yrs	20 (41.7)	19 (28.6)		
16–20 Yrs	7 (14.6)	14 (28.6)		
Parental Family Income				
Low	27 (56.3)	26 (53.1)	.151	.927
Moderate	13 (27.1)	15 (30.6)		
High	8 (16.7)	8 (16.3)		

% = Percentage, p = Probability value, χ^2 = Chi-Square.

currently receiving any psychological treatment from either clinic or from others must not be included in the study. The students who indicated interests were screened using an academic adjustment scale and academic stress scale to obtain the baseline data of their false values. The 97 students who met up with our stated eligibility criteria were recruited to participate in the study while those that did not were excluded. This informed those randomly recruited to the treatment group ($n = 48$) (male = 19, female = 29) and for control group ($n = 49$) (male = 14, female = 35). During the randomization process, the participants were restricted and blocked to maintain adequate concealment until groups were assigned. To realize this, the participants were masked by randomly picking a piece of paper from an envelope. Kindly see Figure 1 for the allocation diagram.

In line with this, participants allocated to the treatment group were exposed to a rational emotive behavioral therapeutic program (REBT) that lasted from September 6, 2018, to December 8, 2018. The REBE-programme was delivered in a group by 3 experts in rational emotive behavioral treatment who have rich experiences and training in the course of their professional practice using English and Igbo languages. The REBT program lasted for 3 months comprising 12-session, 2 sessions per week. Each session lasted for 60 minutes. Below is the skeletal breakdown of the sessions and topics addressed during the implementation of the REBT-programme:

Session 1 = introductions, the establishment of rules and regulation, and objective of the program

Session 2 = Meaning of academic stress and adjustment

Session 3 = How people can become responsible for their poor academic achievement and negatively interpret their failure.

Session 4 = Development of irrational thought, emotional and behavioral consequences of irrational academic thought.

Session 5 = Teaching how to create their view world, and how to cope with reality (accepting losses and limits, bringing about a compromise between the demands of the unconscious and the requirements of reality).

Session 6 = Bringing about a compromise between the demands of the unconscious and the requirements of reality).

Session 7 = How to become socially adaptable individuals, how to build a positive self-image

Session 8 = Teaching how to dispute irrational thought, clarification about the decision that would yield proper adjustment, changing irrational academic poor adjustment-based behaviors, and teaching students' the realistic and flexible ways to interpret what proper adjustment implies (REBT lesson and practice)

Session 9 = Teaching how to dispute irrational thought responsible for academic stress and the realistic and flexible ways to interpret academic events for effective adaptation in school.

Session 10 = Teaching sustainable adjustment skills and reinforcing rational adjustment-based behavior

Session 11 = Teaching sustainable coping skills when facing high academic stress

Session 12 = Termination

During this program session, the researchers adopted the following techniques: cognitive alliance, time conscious and management, disputation and restructuring, reframing, problem-solving skills, and reinforcement. The researchers gave practice exercises to the participants at the end of each session started in session 3 which were often reviewed before the commencement of next session.

By the end of the treatment sessions, the participants in the treatment group and those in control groups were assessed for the second time (Time 2). Also, REBT programme participants and the therapists met after 3 months to observe their progress

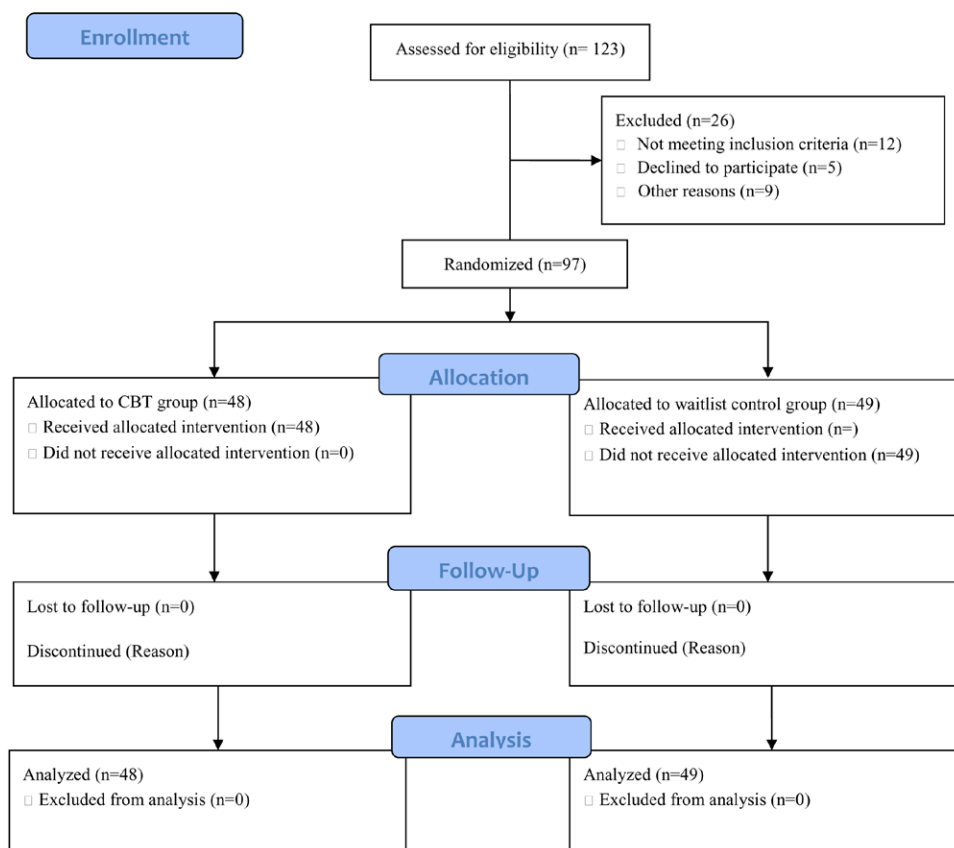


Figure 1. Consort participant eligibility flowchart.

recorded. Beyond the observation, participants had a 2-week follow-up meeting, resulting in a 3rd assessment (Time 3). All the participants attended and completed all of the sessions; no participants dropped out of the study. Selection and potential bias during the process of recruitment and randomization were minimized by covering the treatment allocation from the research assistants and participants. Also, the data analyst was blinded by the researchers until the time he completed all analyses by hiding information in the scale that could reveal the group that received the treatment intervention.

2.7. Therapist

The professionals that implemented the intervention were 3 therapists (2 females and 1 male therapist), with an age range of 47 to 55 years, and trained in counseling psychology. The experts had Ph.D. training in REBT. Since they have received training in REBT, they were briefed and guided on how to use the manual.

2.8. Treatment integrity checklist

In order to achieve the optimum goal of this study, as noted in the treatment manual, we considered it necessary to employ 2 external observers outside the research team. The job given to them was severely spelt out as to; ensure that the objective of the treatment goals by the research team is actualized; to ensure that integrity check is maintained through closely monitoring the therapists' commitment and questioning the skills adopted as the case may be. The reason for this is to avoid mistakes, overlaps, and to maintain absolute compliance with every aspect of the manual. Equally, the observers were given 2 different sheets to record their findings namely, the treatment integrity report sheet and the treatment monitoring report sheet produced by the researchers. The objective of the treatment integrity report sheet is to report the activities of the students during the training, while the treatment monitoring report was designed with the aim of checkmating the implementation procedures of the therapists. The observers perfectly remarked on the participation level of both the therapists and participants since the record sheet contained the number of sessions each participant is expected to attend, and the time voted for each session. Thus, to ensure that the therapists followed the manual strictly, the researchers monitored the implementation process from the beginning to the end.

2.9. Data analysis

After the data collection, sorting, and cueing, IBM SPSS version 28 (IBM Corp., Armonk, NY) was utilized to analyze the participants' responses. Specifically, a multivariate statistic was used to test the effect of the intervention on the dependent variables. The participants' characteristics were descriptively analyzed using crosstabulation such as percentage, frequency, and chi-square.

3. Results

Table 1 shows that there is no significant difference in the demographic characteristics of participants in terms of gender ($\chi^2 = 1.302$, $P = .254$), age ($\chi^2 = 3.382$, $P = .184$), and parent family income ($\chi^2 = 0.151$, $P = .927$) in the treatment group and waitlisted control group.

Table 2 indicates the improvement in the management of academic stress among Industrial Technical students following their participation in the REBT treatment and those in the waitlisted control group (WCG) at 3 points. After the treatment, a second assessment (Time 2) shows that the REBT treatment had a significant effect improvement in academic stress management

among Industrial Technical students as measured by ASS, $F(1, 96) = 84.020$, $P < .001$, $\eta_p^2 = 0.475$, $\Delta R^2 = 0.465$; and subsequently, the participants were assessed at third point (Time 3) and the result remains consistent that REBT treatment had a significant effect in improving academic stress management among Industrial Technical students as measured by ASS, $F(1, 96) = 128.115$, $P < .001$, $\eta_p^2 = 0.579$, $\Delta R^2 = 0.571$.

The result also shows that there is no interaction effect of groups and gender at Time 2, $F(1, 96) = 7.396$, $P = .008$, $\eta_p^2 = 0.074$. The effect size of the REBT treatment at the second assessment (Time 2) for academic stress was .001. This value indicates that the REBT treatment accounted for an effect in improving academic stress management among Industrial Technical students.

Table 3 indicates the improvement in academic adjustment of Industrial Technical students following their participation in the REBT treatment and those in the waitlisted control group (WCG) at 3 points. After the treatment, a second assessment (Time 2) shows that the REBT treatment had a significant effect improvement in academic adjustment among participants as measured by AAS, $F(1, 96) = 4.611$, $P = .034$, $\eta_p^2 = 0.047$, $\Delta R^2 = 0.022$; and subsequently, the participants were assessed at third point (Time 3) and the result remains consistent that REBT treatment had a significant effect in improving academic adjustment among Industrial Technical students as measured by AAS, $F(1, 96) = 7.285$, $P = .008$, $\eta_p^2 = 0.073$, $\Delta R^2 = 0.049$.

The result also shows that there is no interaction effect of groups and gender at Time 2, $F(1, 96) = 0.163$, $P = .687$, $\eta_p^2 = 0.002$. The effect size of the REBT treatment at the second assessment (Time 2) for academic adjustment was 0.001. This value indicates that the REBT treatment accounted for an effect in improving academic adjustment among university students.

4. Discussion

The high level of academic stress^[26–29] inclusive schools that also led to students' poor academic adjustment^[30,31] necessitated this study. Thus, the objective of the study is to examine the effectiveness of rational emotive behavioral therapy on students' poor academic adjustment. The results indicated the improvement in the management of academic stress and academic adjustment among university students following their participation in the REBT treatment and those in the waitlisted control group (WCG) at 3 points. After the treatment, a second assessment shows that the REBT treatment had a significant effect on improvement in academic stress management and academic adjustment among university students and was subsequently sustained at follow-up assessment. It was also found that there is no interaction effect of groups and gender. The improvement gave rise to an increase in the overall adjustment among the treatment group when compared with the control group at posttest and at follow-up. The result, however, is very remarkable as an interventional strategy to increase the overall adjustment among Industrial Technical students in Enugu state, Nigeria. Our study is in line with a past study that students' academic stress and exam anxiety were successfully decreased by the REBT therapy strategy.^[55] Similarly, the outcome of another study demonstrated that REBT had a retention impact on the decrease of academic stress at follow-up.^[56] The findings current study is in consonance with a previous study that reported participants in the intervention group experienced significantly less academic stress than those in the control group. At the follow-up visit, the therapeutic benefits were still there.^[57]

The findings of this study are in agreement with the results of the studies that validated the efficacy of cognitive therapy in influencing adjustment through intervention.^[58,59] Also, the effectiveness of rational emotive behavioral therapy was justified in assisting students to cushion the effect of their academic problems, and personal and social life.^[60] Owuamanam, Ajidahun,

Table 2**Analysis of covariance (Multivariate) for the effect of REBT on academic stress.**

Measures	Time	Group	Gender	Mean (SD)	F	P	η_p^2	ΔR^2
ASS	Time 1	Treatment		126.49 (8.36)	.837	.363	.009	-.003
		Control		124.61 (9.99)				
	Time 2	Treatment		108.92 (7.59)	84.020	<.001	.475	.465
		Control		123.09 (8.59)				
	Time 3	Treatment		106.16 (8.72)	128.115	<.001	.579	.571
		Control		126.48 (9.23)				
Gender	Time 1	Treatment			.455	.502	.005	
		Control						
	Time 2	Treatment			.502	.480	.005	
		Control						
	Time 3	Treatment			.040	.841	.000	
		Control						
Groups * Gender	Time 1	Treatment	Male	126.79 (7.80)	1.202	.276	.013	
			Female	125.98 (9.43)				
		Control	Male	122.96 (9.01)				
			Female	126.33 (10.83)				
		Time 2	Male	111.01 (5.91)				
			Female	105.44 (8.90)				
	Time 3	Control	Male	121.49 (7.58)	7.396	.008	.074	
			Female	124.76 (9.39)				
		Treatment	Male	107.39 (7.88)				
			Female	104.11 (9.86)				
		Control	Male	124.52 (8.14)				
			Female	128.53 (10.00)				

ASS = academic stress scale, Mean (SD) = mean (standard deviation), p = probability value, REBT = rational emotive behaviour therapy, η_p^2 = partial eta square (effect size).**Table 3****Analysis of covariance (multivariate) for the effect of REBT on academic adjustment.**

Measures	Time	Group	Gender	Mean(SD)	F	P	η_p^2	ΔR^2
AAS	Time 1	Treatment		28.56 (3.65)	2.419	.123	.025	-.006
		Control		27.22 (4.70)				
	Time 2	Treatment		29.16 (3.08)	4.611	.034	.047	.022
		Control		27.48 (4.15)				
	Time 3	Treatment		15.47 (2.26)	7.285	.008	.073	.049
		Control		16.69 (1.96)				
Gender	Time 1	Treatment			.000	.999	.000	
		Control						
	Time 2	Treatment			.002	.964	.000	
		Control						
	Time 3	Treatment			.003	.956	.000	
		Control						
Groups * Gender	Time 1	Treatment	Male	28.51 (3.93)	.023	.880	.000	
			Female	28.65 (3.25)				
		Control	Male	27.28 (5.20)				
			Female	27.15 (4.21)				
	Time 2	Treatment	Male	29.29 (3.14)	.163	.687	.002	
			Female	28.95 (3.05)				
		Control	Male	27.35 (4.51)				
			Female	27.62 (3.82)				
	Time 3	Treatment	Male	15.41 (2.41)	.124	.726	.001	
			Female	15.59 (2.03)				
		Control	Male	16.75 (1.75)				
			Female	16.62 (2.19)				

AAS = academic adjustment scale, Mean (SD) = mean (standard deviation), p = probability value, REBT = rational emotive behaviour therapy, η_p^2 = partial eta square (effect size).

and Owuamanam^[61] revealed that REBT is effective in enhancing the self-concept of adolescents. Thus, the finding of this study is a very interesting technique to help adolescents improve greatly and adjust properly in and outside school environs.

In line with our findings, several empirical studies remarked on the effectiveness of REBT in the prevention of psychopathology among the adolescent population.^[62,63] Also, empirical

evidence has indicated that REBT technique decreases both male and female in-school adolescents' academic procrastination.^[64] This suggests that both genders examined in the present study equally benefited from it. This is also supported by your own findings. It further indicates that REBT is effective in enhancing individuals' adjustment and reducing their irrational beliefs. This view is in constant alignment with Ellis^[65]

that REBT has a powerful role in the mental health problems of the individual.

Despite the degree of maladjusted attitude among the adolescent population, they need to be reintegrated academically into their classes through counseling programmes like our REBT treatment package to assist emotionally disadvantaged adolescents to develop adaptive behavior and clarify and alter their irrational thought within and outside the classroom if well applied^[65] This implies that if changes are successful made in cognitive interpretations, behavioral dispositions, and emotional reactions, students would develop an adaptive and flexible life pattern that could help them function effectively wherever they eventually find themselves. The findings of the current study supported Obi and Nicholas^[57] who found that REBT was highly effective in decreasing students' academic stress. Our findings are highly interesting and impressive, also, from the literature reviewed, ours could be seen as the first study to address Industrial Technical Education students' maladjusted problem in Enugu state, Nigeria, using REBT. From the researcher's experience, we believe that students' source of the problem could be attributed to psychological related problems. Hence, well-packaged REBT should gear towards assisting young adolescents in a developing country like Nigeria to recognize how irrational beliefs and negative thoughts leading to maladjustment could be managed. Given the effectiveness of REBT, we suggest establishing rational emotive behavioral institutions across the country where future practitioners could be trained. Also, a well-functional counseling unit should be established and maintained at all levels of education in Nigeria where professional counselors could utilize evidence-based therapy like ours to reduce students' irrational beliefs and other associated challenges that could lead to poor school adjustment.

4.1. Limitations of the study

It is very difficult to come across any research work without a limitation. The current study is saddled with the following shortcoming, the limited population sample size was administered rational emotive behavioral treatment while those in the control group have been denied such opportunities this, therefore, limited us from generalizing the findings to a broader population. The study was limited to only Industrial Technical students in Enugu state, Nigeria. In view of this, we suggest that future research should use a more substantial sample size, that could accommodate other Industrial Technical students beyond Enugu state, Nigeria. The assessment interval for the follow-up study was too short. We, therefore, suggest that a subsequent study should give a longer time frame before the final assessment.

4.2. Strength of the study

Despite the limitation of the current study, this research work validates the efficacy of REBT as a promising psychological treatment package for altering irrational beliefs and navigating adjustment problems among students. Thus, the outcome of the study has indicated that the rationale for using REBT among Industrial Technical students is achieved. The psychological treatment, study design, methods, and post-treatment assessment attest to significant differences in the minds of Industrial Technical students exposed to psychological treatment (REBT) compared to those in the control group. Also, the full commitment, participation, and involvement of Industrial Technical students in this study justify the strength as well. Finally, our potential ability to block, double-blinded concealment reduced threats to internal validity and prevention of bias further adding value to the strength of this current study.

5. Conclusion

By the findings of this study, we concluded that rational emotive behavioral therapy has a sustainable effect in decreasing irrational beliefs which have led to academic stress and maladjustment among the Industrial Technical students in Enugu State, Nigeria. This could also be seen as 1 of the first studies that tested the effectiveness of rational emotive behavioral therapy on academic stress and school adjustment among Industrial Technical students and come to the conclusion, that the subject requires more attention. We, therefore, suggest that future studies explore beyond our area of study the effectiveness of rational emotive behavioral therapy using similar populations.

Author contributions

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