Effect of rational emotive behavior therapy on stress management and irrational beliefs of special education teachers in Nigerian elementary schools

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Abstract

Background/Objective: From a rational emotive behavior therapy viewpoint, stress-related disorders originate from irrational beliefs and self-defeating philosophies and attitude. Individuals affected by stress are different from those ones with neurotic problems mainly because the stressed individuals have irrational beliefs about specific, short-term, or more readily identifiable events, in contrast to the more mundane and diffuse difficulties faced by neurotic persons. The present study aimed to examine the impact of a rational emotive behavior therapy (REBT) intervention on the stress levels and irrational beliefs among special education teachers in elementary schools in Nigeria.

Methods: We employed a group randomized controlled trial design for this study. Eighty-six participants recruited from elementary schools in the South-eastern part of the country were randomly assigned to either a treatment group (n = 43) or no-intervention control group (n = 43). We used the REBT Stress Management Manual to conduct the intervention. Stress levels and irrational beliefs were assessed using self-report questionnaires. Participants in the treatment group took part in the REBT program for 12 weeks and a follow-up program for 2 weeks. Analysis of the data was completed through a 2 \( \times \) 3 within \( \times \) between-subjects repeated measures analysis of variance, and independent samples t test.

Results: Results showed that the REBT group experienced a significant mean decline in stress levels and their beliefs shifted to rational ones both at post-treatment and follow-up. In contrast, the participants in the no-intervention control group showed no improvements at either posttreatment or follow-up sessions.

Conclusion: Rational-emotive behavior therapy is an effective therapeutic modality that can be applied by REBT clinicians for the management of stress. Additional clinical assessments will be necessary to further confirm the impact of an REBT intervention on teachers’ stress management and irrational beliefs in Nigerian elementary school setting.

Abbreviations: ANOVA = analysis of variance, REBT = rational-emotive behavior therapy, TIBS = Teacher Irrational Belief Scale, TSQ = Teacher Stress Questionnaire.

Keywords: elementary schools, irrational beliefs, Nigeria, rational emotive behavior therapy, special education teachers, stress management

1. Introduction

Stress is an emotional situation laden with frustration, tension, exhaustion, and anxiety.\textsuperscript{[1,2]} Several scholars\textsuperscript{[3–14]} have indicated that many teachers experience high stress in their day-to-day experience as educators. Bermejo-Toro and Prieto-Ursua\textsuperscript{[1]} showed that many teachers’ symptoms of stress fall between 60% and 70%. Despite the fact that many teachers are vulnerable to high stress, it seems special education teachers in particular experience greater stress because educating children with special needs has been shown to be extremely tasking and challenging.\textsuperscript{[7,15–18]} Some Nigerian studies have indicated that special education teachers in elementary schools face moderate to extreme stress.\textsuperscript{[3,19]} A study by Agbo\textsuperscript{[19]} revealed that up to 62% of the special education teachers in Nigerian elementary schools consider their work as stressful. If left untreated, high stress level can result in low productivity, absenteeism, poor work performance,\textsuperscript{[16]} job dissatisfaction,\textsuperscript{[3,7,20]} and attrition in the
Special education teachers are responsible for teaching, monitoring, assisting, and managing children with special education needs. These teachers are given the mandate of adapting the school curriculum to meet the needs of each child. These teachers also provide individualized education programs and use diverse techniques of behavior modification, which are suitable for each child. When the children are not making tangible progress, the teachers experience enormous emotional and physical distress.

The stress teachers experience can be measured with the transactional model of stress, which views stress as an interaction between the worker and the external demands, threats, and situations in their work environment. Teachers might experience stress as a result of the frustration and rigors of work. According to Antoniuo et al., the main stressors for special education teachers include taking care of the children with special education needs, excess workload, and lack of governmental support. Proper management of the behaviors of children with special education needs—throwing tantrums, hyperactivity, impulsive behavior, and others—and the perceived excess workload is burdensome tasks for many of these teachers. In addition, many Nigerian teachers do not wish to associate with children with special education needs because they view these children as a bad omen, products of a violated taboo, witches, or people being controlled by malevolent spirits.

Other concerns that may exacerbate the stress level of special education teachers include complexity in implementing the curriculum of special education; ensuring the safety of the children; managing large class sizes, lack of administrative support, and job dissatisfaction; inadequate school facilities for special education; and inadequate time for fulfilling the needs of special education students. Also, as a result of unhelpful and deviating societal perception of the worth of elementary school teachers in developing countries like Nigeria, many special education teachers at the elementary schools are at risk of psychological stress.

Given the negative societal perception of teachers, many educators are at risk of abandoning the teaching profession altogether. One of the psychological therapies for managing teacher stress is discussed in the subsequent section.

1.1. Rational-emotive behavior therapy perspective of stress

From the perspective of rational-emotive behavior therapy (REBT), Ellis noted that the process of stress includes the stressful situations and events in the environment. Thus, REBT practitioners see stress as being the result of the irrational beliefs of the individual in regard to the situation in their environment. To that end, teacher stress is influenced by several factors: the environmental situations (the antecedents); the mediating variables (cognitive factors); and the teachers' response to the antecedents (consequences). Teachers' perception of their enormous work-related tasks and their lack of ability to complete these tasks can inversely impact their mental and/or physical health. In essence, teachers' view of their incapability to act in accordance with their job demands could make them vulnerable to irrational thoughts and beliefs about themselves, their work, their work environment, their colleagues, and their students.

REBT was formally created by Ellis in 1955 to provide a vivid elucidation of the connection between a range of activating events, which individuals experience over the course of their lives, including the beliefs they hold about these events and the complex cognitive, emotional, and behavioral consequences that result from those beliefs. According to REBT experts, individual's beliefs and cognitions about an event highly mediate on the cognitive, emotional, and behavioral consequences that follow the beliefs. Thus, the cognitive, emotional, and behavioral consequences of the activating events are mainly derived from the beliefs, which the client holds about the activating events and not the activating events itself. Client's beliefs could be rational; in which case, it is appropriate, functional, healthy, and adaptive. On the contrary, it could be irrational; in which case, it is inappropriate, dysfunctional, unhealthy, and maladaptive. Irrational beliefs are described as those beliefs, which are not anchored on empirical reality and are thus, logically incoherent, rigid, extreme, and non-pragmatic. But, rational beliefs are described as beliefs which are empirically sound, logically coherent, flexible, non-extreme, and pragmatic. Ellis and Bernard noted that a teacher who believes that they must carry out their job responsibilities well despite the situation might be anxious and unhappy should they perform below their own acceptable standard. Likewise, a teacher who believes that their students must not fail and that their failure is awful as it shows that he has failed as a teacher may face an increased level of stress. Also, thinking in this manner can make the teacher perform more poorly, and/or become aggressive towards him/herself, the students, colleagues, and the environment.

Irrational beliefs can explain teachers' emotional and/or pragmatic problems. Teachers who have irrational beliefs and thoughts about job roles often perceive job demands in a more stressful manner compared with those who have rational beliefs and thoughts. Bernard et al. provided examples of irrational beliefs, which are specific to teachers. For example, "students should not be frustrated"; "people who misbehave deserve severe punishment"; "there should be no discomfort or frustration at school"; and "teachers always need a great deal of help from others to solve school-related problems." These irrational beliefs can lead to a wide range of psychological problems, including extreme stress.

REBT is applied as a therapeutic modality by several REBT clinicians for the management of stress. Unfortunately, the empirical status of this therapeutic approach is yet to be ascertained among elementary school special education teachers who experience stress, particularly in Nigeria. Several Nigerian researchers have used the REBT approach to reduce teacher stress in general secondary and vocational education classes. The present study does not intend to address the stress of general education classroom teachers. Rather, it aims at drawing a sample of elementary school special education teachers whom research evidence indicated that they go through a lot of stress.

According to REBT practitioners, the primary causes for stress are irrational beliefs and self-defeating thoughts. Irrational beliefs are the foundation of the prolonged arousal and the emotional anguish that are shown to be the main causes of most illnesses associated with stress. Therefore, REBT clinicians' debate about stress is that there is nothing inherently stressful, but it is our thinking that makes it so. In other words, REBT experts view stress-related disorders as originating from irrational beliefs and self-defeating philosophies and attitudes, as opposed to a particular stressor. Also, individuals who suffer from stress are different from those clients who suffer from neurotic problems mainly because the stressed clients have irrational beliefs about specific, short-term, or more readily identifiable events, in contrast to the more mundane and diffuse
difficulties suffered by neurotic persons. These assumptions are the basic foundation of the REBT-based treatment for stress, according to Ellis.

The major goal of REBT is to use cognitive, emotive, and behavioral techniques to help individuals to zealously dispute their irrational thoughts and beliefs; to think more rationally; and to act more functionally in order to actualize their life goals and be happier with their lives. Phadke posited that disputing of irrational beliefs involves the uncovering of the beliefs, acknowledging that the beliefs are unrealistic and illogical, disputing the beliefs through differentiation of irrational beliefs from rational ones, and demonstrating to oneself that irrational beliefs will lead to unhealthy living while rational beliefs will lead to healthy living. In this regard, Ellis suggested that the best approach to dispute and deal with irrational beliefs was to alter the irrational beliefs by means of rational, emotive, and behavioral techniques. Specifically, REBT techniques include role-playing, rational emotive imagery, unconditional acceptance, self-dialogues and use of forceful self-statements; and homework assignments, skills training, implosive assignments, and reinforcement activity.

Despite the above observations, little is known about the effectiveness of any stress management intervention designed for elementary school special education teachers in Nigeria. The major aim of the current study is to examine the impact of REBT on stress management and irrational beliefs for special education teachers in Nigerian elementary schools. It is this study’s hypothesis that after attending an REBT intervention, a significant reduction in stress level and irrational beliefs will occur among the elementary school special education teachers in the treatment condition in contrast to those in the no-intervention control condition. If it occurs, such positive change may be sustained at follow-up meetings for those teachers enrolled in the REBT intervention compared with participants in the no-intervention control group.

2. Materials and methods

2.1. Statement of ethical considerations

Approval to carry out this research was obtained from the Research Ethics Committee of the Department of Educational Foundations, University of Nigeria, Nsukka. To be eligible for participation, the researchers ensured that the teachers provided informed, written consent. This research also adhered to the research ethics statement of the American Psychological Association and World Medical Association’s Declaration of Helsinki.

2.2. Participants

In the beginning of the study, the levels of stress and irrational beliefs of 138 special education teachers were ascertained using the Teacher Stress Questionnaire (TSQ) and Teacher Irrational Belief Scale (TIBS) respectively. The study consisted of a total of 86 special education teachers with high levels of stress and irrational beliefs who were working in elementary schools in Southeast Nigeria during the 2016/2017 academic year. Power analysis indicated that 28 participants are adequate for an analysis of variance repeated-measures within-between subjects interaction (α = 0.05; power = 0.8). Using Random Allocation Software, we assigned the teachers to 1 of 2 groups: treatment group (n = 43); and no-intervention control group (n = 43) (see Fig. 1). Participants were also required to meet the following inclusionary criteria: currently employed as a full-time, special education teacher; provide the informed written consent; readily accessible throughout the time of the research, and not involved in any stress management intervention for the duration of the study period. The participants’ demographic characteristics are shown in Table 1.

2.3. Measures

2.3.1. Teachers’ stress questionnaire (TSQ). The study employed the TSQ, which was developed and validated by Eze, to measure teachers’ levels of stress. The TSQ has a total of 30 items. In the TSQ, teachers are asked to indicate the extent to which they experience stress in the following 5 subscales: classroom management problems; work-related emotional problems; time management at the workplace; school administration problems; and professional distress. TSQ is rated on a 5-point scale: Not Stressful; Slightly Stressful; Moderately Stressful; Very Stressful; and Extremely Stressful. The high scores obtained from the TSQ indicated a high level of stress among the teachers who participated in the study. The internal consistencies (Cronbach α) of the TSQ, which were reported by Eze, were as follows: 0.88, 0.84, 0.76, 0.81, and 0.73 for the 5 subscales, respectively. The overall reliability coefficient of the TSQ was given as 0.80. Table 2 shows details of the reliability estimates of the TSQ.

2.3.2. Teacher irrational belief scale (TIBS). Bernard developed the TIBS, a 30-item scale, which measures teachers’ irrational beliefs in relation to teachers’ tasks. TIBS has been employed in previous studies with teachers and has been known to provide valid and reliable results. The TIBS focuses on teachers’ absolutist thinking, exaggeration, or a tendency toward disproportionate perception, low frustration tolerance, and overgeneralization. The TIBS has a 5-point scale: Strongly disagree; Disagree; Not sure; Agree; and Strongly agree. Bora et al. reported the following reliabilities for the TIBS subscales: Self-downing (0.66); Low Frustration Tolerance (0.48); Demandingness (0.68); and Total (0.74). Table 3 offers details of the reliability estimates of the TIBS in the current study.

2.3.3. Demographic questionnaire. This demographic questionnaire was used to obtain participant’s demographic information, which includes, sex, age, class taught, years of teaching experience, and category of special needs children taught.

2.4. Study design and procedure

For this study, we adopted a group randomized controlled trial design. The teachers’ stress levels and irrational beliefs were assessed at 3 time points: Time 1, baseline data; Time 2, posttreatment data; and Time 3, follow-up data. Prior to the intervention, we visited elementary schools in the study area to explain the purpose of the study to the teachers and shared a consent form for the teachers to review and sign in order to participate in the study. The teachers were assured of the confidentiality of the information they provided. After 2 weeks, we visited a second time so the teachers could respond to the TSQ and TIBS. For this time, the levels of stress and irrational beliefs of 138 special education teachers were evaluated using the TSQ and the TIBS, respectively. Analysis of their responses enabled the researchers to identify those with both high stress and irrational
beliefs (n = 86). Teachers in the treatment group participated in the bi-weekly REBT treatment for a period of 12 weeks of 90 minutes each. The intervention was delivered using the REBT Teacher Stress Manual by Eze.[2] Four months after Time 2, we conducted 2-week follow-up meetings, which took place twice per week, which resulted in the acquisition of the follow-up data (Time 3). The intervention was delivered by 3 of REBT researchers. During each period of assessment, the questionnaires

Table 1
Demographic characteristics of the participants.

| Characteristics                      | Treatment group | No-intervention group | t test | Significance |
|--------------------------------------|-----------------|-----------------------|--------|--------------|
| Age, M (SD)                           | 39.37 (7.99)    | 39.39 (8.02)          | -0.013 | 0.989        |
| Gender                               |                 |                       |        |              |
| Male teachers                        | 15 (55.6)       | 12 (44.4)             |        |              |
| Female teachers                      | 28 (47.5)       | 31 (52.5)             |        |              |
| Experience                           |                 |                       |        |              |
| <5 y                                 | 11 (29.7)       | 26 (70.3)             | 14.272 | 0.001        |
| 6–15 y                               | 15 (53.6)       | 13 (46.4)             |        |              |
| ≥16 y                                | 17 (81.0)       | 4 (19.0)              |        |              |
| School taught                        |                 |                       |        |              |
| Lower Elementary                     | 22 (51.2)       | 21 (48.8)             | 0.047  | 0.829        |
| Upper Elementary                     | 21 (48.8)       | 22 (51.2)             |        |              |
| Category of students taught          |                 |                       |        |              |
| Students with visual impairment      | 8 (53.3)        | 7 (46.7)              | 2.448  | 0.784        |
| Students with emotional behavior disorder | 6 (46.2)     | 7 (53.8)              |        |              |
| Students with hearing impairment     | 8 (53.3)        | 7 (46.7)              |        |              |
| Students with autism                  | 8 (57.1)        | 6 (42.9)              |        |              |
| Students with learning disability    | 8 (57.1)        | 6 (42.9)              |        |              |
| Students with intellectual disability| 5 (33.3)        | 10 (66.7)             |        |              |
were retrieved right away from the teachers. Also, during recruitment and randomization, the elimination of selection bias was achieved through concealing of the allocation sequence from the participants. To ensure that there was reduction of risk of potential bias, blinding of the data analyst took place until all statistical analyses were done through concealment of some details in the data collection instruments which might disclose the group that benefited from the actual intervention.

2.5. Intervention

2.5.1. REBT teacher stress management manual. The study employed a detailed and systematic REBT teacher stress management manual, which had already been successfully implemented to reduce the stress of teachers in a previous study.[21] The stress management intervention lasted for 12 weeks. It was a 24-session encounter, with 2 sessions per week. Each therapeutic session lasted for 90 minutes. The treatment involved engaging the teachers in the identification of their work-related irrational beliefs and perceived stressors. Thereafter, they were taught to question their work-related irrational beliefs and replace them with rational ones. Also, participants were introduced to REBT stress management techniques as employed by Eze.[3]

The cognitive, emotive, and behavioral techniques of REBT highlighted by Corey,[78] as well as by Ellis and Bernard,[44] were employed in the intervention program. Cognitive techniques included actively disputing teachers’ irrational beliefs, cognitive homework assignments, psychoeducational techniques, changing one’s language, use of rational self-statements, and reframing. As a way of completing the cognitive homework assignments, participants completed an REBT Self-Help Form.[80-82] This form enabled the participants to critically appraise the discrepancy of their work-related irrational beliefs. Emotive techniques utilized included rational emotive imagery, humorous songs, shame-attacking exercises, force and vigor, emotive homework assignments, and role-playing. The behavioral techniques included relaxation, self-management/activity scheduling, distraction techniques, systematic desensitization, and behavioral homework assignments. Each therapeutic session concluded with a homework assignment, which was to be completed before the next session.

2.6. Method of data analysis

We conducted the t test for independent-samples to determine the baseline differences in the levels of stress and irrational beliefs of the study participants according to the group. In the current study, a 2 × 3 within × between-subjects repeated measures analysis of variance (ANOVA) test was used to report the main effect of treatment condition; the main effect of time (pretreatment vs posttreatment and follow-up); and the time × group interaction effect. Effect sizes of the REBT treatment intervention were shown using eta squared ($\eta^2$). Also, post-hoc analyses via Bonferroni corrections procedure for P-values were carried out as

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**Table 2**

| Items | Treatment group Item—total correlation | No-intervention Control group Item—total correlation |
|-------|---------------------------------------|-----------------------------------------------|
| Item 1 | 0.789                                 | 0.771                                         |
| Item 2 | 0.640                                 | 0.739                                         |
| Item 3 | 0.790                                 | 0.651                                         |
| Item 4 | 0.650                                 | 0.775                                         |
| Item 5 | 0.567                                 | 0.859                                         |
| Item 6 | 0.717                                 | 0.722                                         |
| Item 7 | 0.759                                 | 0.624                                         |
| Item 8 | 0.833                                 | 0.704                                         |
| Item 9 | 0.771                                 | 0.794                                         |
| Item 10| 0.802                                 | 0.719                                         |
| Item 11| 0.603                                 | 0.724                                         |
| Item 12| 0.802                                 | 0.852                                         |
| Item 13| 0.785                                 | 0.756                                         |
| Item 14| 0.797                                 | 0.738                                         |
| Item 15| 0.643                                 | 0.785                                         |
| Item 16| 0.817                                 | 0.742                                         |
| Item 17| 0.819                                 | 0.782                                         |
| Item 18| 0.735                                 | 0.839                                         |
| Item 19| 0.833                                 | 0.684                                         |
| Item 20| 0.905                                 | 0.709                                         |
| Item 21| 0.835                                 | 0.587                                         |
| Item 22| 0.846                                 | 0.708                                         |
| Item 23| 0.864                                 | 0.769                                         |
| Item 24| 0.749                                 | 0.702                                         |
| Item 25| 0.886                                 | 0.809                                         |
| Item 26| 0.757                                 | 0.903                                         |
| Item 27| 0.799                                 | 0.794                                         |
| Item 28| 0.790                                 | 0.835                                         |
| Item 29| 0.754                                 | 0.751                                         |
| Item 30| 0.725                                 | 0.664                                         |
| Cronbach $\alpha$ | 0.920 | 0.914 |

**Table 3**

| Items | Treatment group Item—total correlation | No-intervention Control group Item—total correlation |
|-------|---------------------------------------|-----------------------------------------------|
| Item 1 | 0.830                                 | 0.773                                         |
| Item 2 | 0.893                                 | 0.729                                         |
| Item 3 | 0.752                                 | 0.659                                         |
| Item 4 | 0.809                                 | 0.819                                         |
| Item 5 | 0.858                                 | 0.708                                         |
| Item 6 | 0.795                                 | 0.773                                         |
| Item 7 | 0.809                                 | 0.841                                         |
| Item 8 | 0.886                                 | 0.710                                         |
| Item 9 | 0.845                                 | 0.777                                         |
| Item 10| 0.792                                 | 0.793                                         |
| Item 11| 0.870                                 | 0.762                                         |
| Item 12| 0.853                                 | 0.741                                         |
| Item 13| 0.834                                 | 0.777                                         |
| Item 14| 0.838                                 | 0.745                                         |
| Item 15| 0.827                                 | 0.718                                         |
| Item 16| 0.751                                 | 0.671                                         |
| Item 17| 0.850                                 | 0.719                                         |
| Item 18| 0.842                                 | 0.856                                         |
| Item 19| 0.803                                 | 0.770                                         |
| Item 20| 0.760                                 | 0.831                                         |
| Item 21| 0.697                                 | 0.571                                         |
| Item 22| 0.799                                 | 0.744                                         |
| Item 23| 0.687                                 | 0.835                                         |
| Item 24| 0.771                                 | 0.732                                         |
| Item 25| 0.772                                 | 0.842                                         |
| Item 26| 0.838                                 | 0.725                                         |
| Item 27| 0.749                                 | 0.572                                         |
| Item 28| 0.828                                 | 0.654                                         |
| Item 29| 0.922                                 | 0.767                                         |
| Item 30| 0.776                                 | 0.792                                         |
| Cronbach $\alpha$ | 0.803 | 0.817 |

Items correspond with the content of TSD by Eze.[21]
in Ogbuanya et al.\cite{83}. Furthermore, we carried out the Levene test for assumptions violations. The test result was not statistically significant, \( F(1, 84) = 0.675; P = .414 \), which implied that all assumptions were met. Robust tests of equality of means (Welch and Brown-Forsythe tests) based on times and measures were conducted. All the statistical analyses, including screening for missing values (there were no missing values), were done in SPSS, version 22.

### 3. Results

Table 3 indicates the teachers’ levels of stress in the no-intervention control group and the treatment group at Time 1 (pretreatment). As shown, the \( t \)-test for independent samples indicated that there were no baseline differences in the level of stress (TSQ) between special education teachers in the no-intervention control group \( (124.92 \pm 8.99) \) and those in the treatment group \( (123.31 \pm 3.68) \), \( t(84) = -0.413, P = .675 \), confidence interval \( (CI) = -0.04, 0.85 \). Thus, the level of stress of both groups was not significantly different at pretreatment. Also, the \( t \)-test for independent samples indicated that there were no baseline differences in irrational beliefs (TIBS) between elementary school special education teachers in the no-intervention control group \( (122.08 \pm 4.80) \) and those in the treatment group \( (123.15 \pm 4.27) \), \( t(84) = 1.971, P = .052, CI = -0.02, 3.88 \). Thus, the level of teacher irrational beliefs for both groups was not significantly different at Time 1.

A \( 2 \times 3 \) within \( \times \) between-subjects ANOVA test was carried out to ascertain the main effect of treatment condition, the main effect of time, and time \( \times \) group interaction effect with respect to stress levels of elementary school special education teachers (see Table 4). Our results showed that the main effect of treatment condition on stress level was significant: \( F(1, 84) = 389.93, P < .001, \eta^2 = 0.823 \). These findings indicated that the treatment condition brought about a significant decrease in the stress levels of the special education teachers in the REBT intervention in contrast with those teachers in the no-intervention control condition. The results also indicated that there was a significant main effect of time on teacher stress: \( F(1, 84) = 631.81, P < .001, \eta^2 = 0.938 \). The ANOVA results showed a significant time \( \times \) group interaction effect for stress level: \( F(1, 84) = 438.57, P < .001, \eta^2 = 0.914 \). There was a significant decline in stress levels at follow-up evaluation (Time 3) for teachers in the treatment condition in contrast with those teachers in the no-intervention control condition: \( F(1, 84) = 623.15, P < .001, \eta^2 = 0.881 \). These results affirmed the hypothesized positive outcome of an REBT intervention on the stress levels of the special education teachers. Figure 2 shows the time \( \times \) group interaction effect.

A \( 2 \times 3 \) within \( \times \) between-subjects ANOVA test was conducted to determine the main effect of treatment condition, the main effect of time, and time \( \times \) group interaction effect with regard to irrational beliefs of the special education teachers (see Table 4). The results showed that there was a significant effect of treatment condition on irrational beliefs of teachers: \( F(1, 84) = 500.05, P < .001, \eta^2 = 0.856 \). These results implied that the treatment condition resulted in a significant decrease in irrational beliefs for those in REBT intervention in contrast to those in the no-intervention control condition. The results also indicated that the main effect of time on irrational beliefs was significant: \( F(1, 84) = 604.58, P < .001, \eta^2 = 0.936 \).

The results of the ANOVA test indicated that time \( \times \) group interaction effect for teachers’ irrational beliefs was significant: \( F(1, 84) = 494.46, P < .001, \eta^2 = 0.923 \). There was a significant decline in irrational beliefs scores of treatment group participants at follow-up evaluation (Time 3) in contrast with those in the no-intervention control group: \( F(1, 63) = 538.21, P < .001, \eta^2 = 0.865 \). These results validated the hypothesized positive outcome of an REBT intervention on irrational beliefs of the elementary school special education teachers. Figure 3 represents the time \( \times \) group interaction effect.

As can be seen in Table 5, post-hoc analyses via Bonferroni showed that teachers’ stress levels significantly changed over the course of the study for the treatment group in contrast with those in the no-intervention control condition, which did not significantly change. The post-hoc outcome also showed that the stress level scores between the 2 groups in Time 1 were not statistically different. However, the stress level of the treatment group in contrast with the no-intervention control group at Time 2 and Time 3 were statistically different (all \( P \)-values <.001).

As can be seen in Table 6, post-hoc analyses via Bonferroni showed that the teachers’ irrational beliefs significantly changed over time for the treatment group in comparison with those in the no-intervention control condition, which did not change significantly over the course of the study. The post-hoc outcome showed that the irrational beliefs scores between the 2 groups in Time 1 were not statistically different. However, the irrational beliefs of the special education teachers in the treatment group in

### Table 4

Repeated measures ANOVA results of effect of the REBT intervention on stress and irrational beliefs of the elementary school special education teachers by times of measurement and groups.

| Measures | Time       | Groups                  | Mean  | SD    | \( F \) test | Significance | \( \eta^2 \) |
|----------|------------|-------------------------|-------|-------|--------------|--------------|-------------|
| TSQ      | Time 1     | Treatment               | 123.31| 3.68  | 1.977        | 0.161        | 0.023       |
|          |            | No-intervention control | 124.02| 8.99  |              |              |             |
|          | Time 2     | Treatment               | 91.23 | 3.61  | 389.93       | <0.001       | 0.823       |
|          |            | No-intervention control | 123.35| 10.39 |              |              |             |
|          | Time 3     | Treatment               | 64.28 | 4.33  | 623.15       | <0.001       | 0.881       |
|          |            | No-intervention control | 119.04| 13.68 |              |              |             |
| TIBS     | Time 1     | Treatment               | 123.15| 4.267 | 3.88         | 0.052        | 0.044       |
|          |            | No-intervention control | 122.08| 4.80  |              |              |             |
|          | Time 2     | Treatment               | 65.85 | 14.66 | 500.05       | <0.001       | 0.856       |
|          |            | No-intervention control | 121.94| 7.14  |              |              |             |
|          | Time 3     | Treatment               | 61.83 | 6.05  | 538.21       | <0.001       | 0.865       |
|          |            | No-intervention control | 117.94| 14.26 |              |              |             |

\( \eta^2 \) = eta squared (measure of effect size), ANOVA = analysis of variance, REBT = rational-emotive behavior therapy, TIBS = Teacher Irrational Beliefs Scale, TSQ = Teacher Stress Questionnaire.
contrast with the no-intervention control group at Time 2, and Time 3 were statistically different (all $P$-values <.001).

Table 7 presents the robust test of equality of means obtained by participants according to the times of measurement. The results showed that TSQ and TIBS scores of participants in the 2 groups were not statistically different at Time 1. However, at both Time 2 and Time 3, TSQ and TIBS scores of participants in the 2 groups were statistically different.

Figure 2. Time x Group interaction effect of REBT on stress of elementary school special education teachers. REBT = rational-emotive behavior therapy.

Figure 3. Time x Group interaction effect of REBT on irrational beliefs of elementary school special education teachers. REBT = rational-emotive behavior therapy.
4. Discussion

The results of this study were significant in that they have added to the empirical status of REBT intervention in reducing stress and irrational beliefs in the population of elementary schools' special education teachers in Southeast Nigeria who participated in the study. Our results showed that the special education teachers in the REBT treatment group benefited significantly from the intervention. There was a significant diminution not just in the stress level of the special education teachers, but also in their irrational beliefs in contrast with teachers in the no-intervention control group at posttreatment. This finding was in agreement with previous studies, which indicated that REBT was an efficacious approach for stress management. A study showed that an REBT intervention resulted in a significant reduction of teacher stress and irrational beliefs. Our results demonstrated a continuous effect of REBT intervention on stress levels and irrational beliefs of the special education teachers who received the treatment in view of their follow-up scores in the TSQ and TIBS. The fact that the REBT treatment group showed a continuous reduction from post-test to follow-up showed a positive effect of REBT on work-related stress and irrational beliefs of special education teachers. The ability of the teachers in the REBT treatment group to replace their irrational beliefs with rational beliefs, to learn and use the REBT techniques such as rational emotive imagery, role-

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**Table 5**

Bonferroni-Holm pairwise comparisons of effect of REBT intervention on stress (TSQ) of the elementary school special education teachers across different times of measurement.

| Time   | (I) Groups               | (J) Groups             | Mean Difference (I − J) | Significance† | 95% CI† |
|--------|--------------------------|------------------------|-------------------------|---------------|--------|
| Time 1 | Treatment                | No-intervention control| −1.610                  | 0.339         | −4.339, 1.719 |
|        | No-intervention control  | Treatment              | 1.610                   | 0.339         | −1.719, 4.939 |
| Time 2 | Treatment                | No-intervention control| −33.125*                | <0.001        | −36.925, −29.324 |
|        | No-intervention control  | Treatment              | 33.125*                 | <0.001        | 29.324, 36.925 |
| Time 3 | Treatment                | No-intervention control| −54.767*                | <0.001        | −59.818, −49.716 |
|        | No-intervention control  | Treatment              | 54.767*                 | <0.001        | 49.716, 59.818 |

Based on estimated marginal means. CI = confidence interval, REBT = rational-emotive behavior therapy.
† The mean difference is significant at the .05 level.
* Adjustment for multiple comparisons: Bonferroni.

**Table 6**

Bonferroni-Holm pairwise comparisons of effect of REBT intervention on irrational beliefs (TIBS) of the elementary school special education teachers across different times of measurement.

| Time   | (I) Group               | (J) Groups             | Mean difference (I − J) | Significance† | 95% CI† |
|--------|-------------------------|------------------------|-------------------------|---------------|--------|
| Time 1 | Treatment               | No-intervention control| 1.060                   | 0.336         | −1.120, 3.240 |
|        | No-intervention control | Treatment              | −1.060                  | 0.336         | −3.240, 1.120 |
| Time 2 | Treatment               | No-intervention control| −56.103*                | <0.001        | −61.690, −50.515 |
|        | No-intervention control | Treatment              | 56.103*                 | <0.001        | 50.515, 61.690 |
| Time 3 | Treatment               | No-intervention control| −56.123*                | <0.001        | −61.400, −50.847 |
|        | No-intervention control | Treatment              | 56.123*                 | <0.001        | 50.847, 61.400 |

Based on estimated marginal means. CI = confidence interval, REBT = rational-emotive behavior therapy.
† The mean difference is significant at the .05 level.
* Adjustment for multiple comparisons: Bonferroni.

**Table 7**

Robust tests of equality of means by times and measures.

| Time   | Tests       | Statistic | df1 | df2 | Significance |
|--------|-------------|-----------|-----|-----|--------------|
| Time 1 (TSQ) | Welch       | 1.99      | 1   | 55.69| 0.163        |
|          | Brown-Forsythe | 1.99    | 1   | 55.69| 0.163        |
| Time 1 (TIBS) | Welch      | 3.88      | 1   | 82.86| 0.052        |
|          | Brown-Forsythe | 3.88   | 1   | 82.86| 0.052        |
| Time 2 (TSQ) | Welch      | 389.93    | 1   | 52.01| <0.001       |
|          | Brown-Forsythe | 389.93 | 1   | 52.01| <0.001       |
| Time 2 (TIBS) | Welch     | 500.05    | 1   | 60.85| <0.001       |
|          | Brown-Forsythe | 500.05| 1   | 60.85| <0.001       |
| TIME 3 (TSQ) | Welch    | 623.15    | 1   | 50.31| <0.001       |
|          | Brown-Forsythe | 623.15| 1   | 50.31| <0.001       |
| TIME 3 (TIBS) | Welch   | 538.22    | 1   | 56.67| <0.001       |
|          | Brown-Forsythe | 538.22| 1   | 56.67| <0.001       |

TIBS = Teacher Irrational Beliefs Scale, TSQ = Teacher Stress Questionnaire.
* Asymptotically F distributed.
playing,[67] unconditional acceptance,[53] reinforcement activity, homework assignments,[44] and others accounted, for the positive gains experienced by the teachers. In addition, Ellis[40] stated that the best method for altering irrational beliefs was to change the thinking system or belief of the individual. REBT practitioners have also noted that any alteration in irrational beliefs of an individual will invariably lead to a decrease in the emotional disturbance induced by stress.[46,69] One implication of our finding was discovering that assisting elementary school special education teachers to build up rational thoughts and beliefs and use rational emotive coping strategies enabled them to better cope with stressful situations in their place of work. This finding was indispensable, particularly given that previous study indicated that corporations have been seeking more effective work-related stress management interventions, which could positively influence employees’ well-being and job performance.[84] The implementation of REBT for special education teachers who experience high levels of stress positively impacted both work-related beliefs and stress levels.

Given that individuals have the natural capacity to build up irrational thoughts and beliefs, they also have the ability to vigorously question and change those thoughts and beliefs using REBT techniques.[45] This study gave the special education teachers the opportunity to learn how to identify their work-related irrational beliefs and how to alter those beliefs using REBT techniques. The teachers were also able to reduce their levels of work-related stress. This study outcome was consistent with the assertions of REBT experts, who have acknowledged that since stress was caused by an individual’s irrational beliefs, any changes to irrational beliefs would invariably lead to the reduction of emotional disturbances.[46,69]

One limitation of the present study was the fact that the control group was not given any intervention at all. It has been suggested that future studies should compare the efficacy of an REBT intervention with other therapeutic approaches used in the management of stress. Also, the questionnaire, which assessed the stress level of teachers, has not been widely validated. Further research is needed to ascertain the factor structure and internal consistencies of the TSQ through cross-cultural validation procedure. Practitioners could also argue that our study was limited by the fact that we combined TSQ and TIBS scores instead of the subscales to interpret the study outcomes. While this has been acknowledged, we hope to emphasize that the use of combined TSQ scores and TIBS scores were considered appropriate for the study in that previous studies have shown that summated scales can offer accurate benchmarks for the interpretation of treatment outcomes, as well as for determining and arriving at consistent conclusions regarding changes in irrational beliefs as a psychological construct.[47] We also decided to use the combined scores of the TSQ and TIBS because several other authors indicated that measurement error averages out through the summation of scores to obtain a global score.[46,87]

5. Conclusion

This study examined the usefulness of an REBT intervention on stress management and irrational beliefs of special education teachers in elementary schools in Southeast Nigeria. The REBT intervention resulted in a significant diminution in teacher stress for those who participated in treatment group in contrast with those who participated in the no-intervention control group. The positive gains of the REBT intervention were present at follow-up evaluations. Therefore, the researchers concluded that an REBT intervention was efficacious for managing teacher stress and also transforming teachers’ irrational beliefs in this population. The outcome of this research is relevant to curb the stressors in the current education system, especially for special education teachers. To that end, more clinical assessments are needed to further confirm the impact of an REBT intervention on stress management and irrational beliefs in this population of teachers. Further studies are also required to determine if an REBT program may likewise lessen the emotional distress of these teachers.

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