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Examining the impact of randomized control intervention on depressive symptoms in schoolchildren with atypical behaviors

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Abstract

Background: The need to investigate depression among disadvantaged groups motivated this study. This study investigated the impacts of rational emotive behavior therapy (REBT) on depressive symptoms in schoolchildren with atypical behaviors in Enugu State Nigeria.

Method: A group randomized controlled design was used to assign 37 schoolchildren to the intervention group and 37 schoolchildren to the waitlisted control group. These people were evaluated at three times (pretest, post-test, and later test) using a dependent measure. The outcome demonstrated that there was no discernible difference between the participants in the treatment group and those in the waitlisted control group at the time of the pretest. The post-treatment test results revealed a considerable improvement among participants as a result of REBT therapy.

Results: The later test result revealed that the treatment's significant improvement was maintained in favor of the REBT group. The outcome of REBT treatment was not moderated due to location. The data showed a significant interaction impact on participants' depression levels in relation to the interaction between groups and gender during therapy.

Conclusion: Following the outcomes, we concluded that REBT is a long-term efficacious intervention for treating depressive symptoms in schoolchildren with atypical behaviors in Enugu State Nigeria regardless of location and gender.

Abbreviations: n = number of participants, REBT = rational emotive behavior therapy, sig = associated probability, χ^2 = chi-square, η_p^2 = partial eta square.

Keywords: depressive symptoms, disadvantageous group, rational emotive behavior therapy, schoolchildren atypical behaviors

1. Introduction

Atypical behavior is defined by the social conformance theory as behavior that deviates from societal norms.[1] It is not simply what a person says or does; behavior that is deemed acceptable in one setting but outrageous or weird in another, even when it involves the same group of people, is not just what a person says or does. For instance, a group of individuals may act a certain way at a football game, but if one of those same people were to act the same way while waiting for a train to go to work, his colleague would likely consider it odd behavior and suggest his friend seek treatment.[1] Rosenhan and Seligman[2] highlighted that poor interpretation of events and irrationality characterized their behaviors.

Studies have validated the existing link between irrational behavior and mental health-related problems like depression.[3,4] Depression could be conceived as a significant major public health challenge with serious psychological and physiological consequences like lack of interest in learning and poor academic performance,[5] low self-esteem,[6] and anti-social mood.[7] People with depressive symptoms experience loss of appetite, unpleasant mood, hopelessness, irritability, and truancy.[7]

Related studies indicated that depressive disorders alone account for two-fifths of Disability Adjusted Life Years.[8] The schoolchildren who are depressed experience maladaptive coping and demonstrate low turnout to school and poor class attendance.[9] A related study reported that depression

The authors have no conflicts of interest to disclose.

The datasets generated during and/or analyzed during the current study are not publicly available, but are available from the corresponding author on reasonable request.

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induces suffering and decreases the level of productivity,[10] and adversely affects individuals functioning including those with atypical behaviors.[11] The negative experience of mental and social unhealthiness[12] as well as unhealthy self-stereotypes.[13,14] It is characterized by fear of embarrassment and humiliation.[15] Literature has revealed that individuals with depresymptomatic syndrome could be vulnerable to negative stereotypes from peers, distress, low self-esteem, lower quality educational attainment, and suicidal ideation.[16] These ugly depressive experiences have been experienced by both male and female gender. Though, we are not sure if the gender of schoolchildren with atypical behaviors could play role in depressogenic beliefs or disbelief.

Depression among schoolchildren with disability is reported to be high in other countries, for instance, 70% in Ethiopia,[17] 44.02% in Pakistan,[18] 33% in Iran.[19] In Nigeria, depression is found to be common among schoolchildren especially those with common disabilities.[5] Recently, Shuaib et al,[20] reported a 21.2% rate of schoolchildren in Nigeria. In Enugu state, Nigeria, researchers' observation shows that schoolchildren with atypical behaviors are vulnerable to discrimination, fighting, rejection by peers, and withdrawal from school activities.

Upon the increased prevalence of depressive disorders found among schoolchildren, limited studies have focused on increasing their psychological well-being, especially in a developing country like Nigeria. The research gaps with regard to psychological intervention for schoolchildren with atypical behaviors are alarming and indeed causing multiple problems to teachers, parents, and schoolchildren. The worrisome situation is the lack of human and non-human resources that could assist vulnerable schoolchildren with psychological treatment options. The lack of mental health resources in schools has been one of the primary issues receiving increased attention in recent years.[21] Students are lagging behind their peers without the appropriate services, especially those who are undiagnosed or untreated.[21] Contrary to Nigerian situations, a National Survey of Children's Health revealed that barely 79% of children diagnosed with depression have been treated in America.[22] Despite the significant advancements made in the treatment of depression over the past few decades, psychological interventions still fall short in between 20 and 30 percent of patients.[23] This suggests further psychological management techniques to sufficiently address relevant depression-related issues.[24]

Insufficient psychological treatment strategies could stir up depressive symptoms experienced by schoolchildren with atypical behaviors. Given the positive treatment outcomes of assumptions rational emotive behavior therapy (REBT) as reported by past studies,[3,25] we argue that Rational emotive behavior therapy could be effective in altering automatic and irrational thoughts associated with depression. The assumptions guiding REBT were propounded by Albert Ellis. The theorist postulated that individual pattern of thinking determines their mood, behavior, and decisions regarding self and relationship with others. Hence, all actions of individuals determine through a rational pattern.[4] Thus, REBT focus on creating a new mental approach to alter the way an individual thinks and behaves which could predispose them to depression. That is, being rational other than irrational. Ellis postulates that individuals are born with such characteristics as being rational and irrational.[26] The researcher further remarked that the REBT model proposes that individuals' cognitive, emotional, and behavioral consequences are solely determined by the belief system (B).[27] The belief system that produces negative consequences is due to irrational assumptions. Rational belief is the logical, flexible, and non-extreme way of representing realities while irrational ones are characterized by extreme, rigid, and illogical.[28] The major cardinal irrational beliefs commonly held by individuals include demandingness, self-downing beliefs, low frustration tolerance beliefs, and awfulizing beliefs.[29]

REBT studies have argued that well application of REBT techniques and its principles could help to decrease depressive symptoms.[25,27,30] With these in mind, we investigated the impacts of REBT in treating depressogenic beliefs associated with schoolchildren with atypical behaviors in Abia state, Nigeria. This study was guided by some hypotheses. There will be a significant impact of REBT treatment on schoolchildren with depressive symptoms. There will be a significant group and gender interaction effect on depression scores among schoolchildren.

2. Material and methods

2.1. Participants and procedures

The participants consisted of 74 schoolchildren identified with atypical behaviors in Enugu state Nigeria. The power of the sample size was determined using GPower 3.1 software[32] which indicated that participants were roughly adequate. There were 15 (38.5%) males and 17 (48.6%) females in the treatment group and 24 (61.5%) males and 18 (51.4%) females in the control group. Of all the schoolchildren in the treatment, 20 (44.4%) and 12 (41.4%) were from rural and urban locations, respectively. For the control group, 25 (55.6%) and 17 (58.6%) were from rural and urban locations. There was no significant difference between participants in the treatment group and those in the comparison group with regard to gender (χ^2 = 0.768, P = .381) and location (χ^2 = 0.287, P = .592).

The permission to conduct this research work was granted by the ethics and research committee of one of the researchers. In line with the American Psychological Association[31] established rules and guidelines, we sought the consent of the parents and headteachers, and schoolchildren who gave their permission and authorization for us to conduct the study.

After obtaining the ethical approval, we surveyed the seven special schools (5 urban schools and 2 rural schools) in Abia state, Nigeria that constituted the study location. The aim was to officially seek the permission of the head teachers at the school selected for the study. Secondly, we equally sought school records and the assistance of the schoolteachers to enable us to identify those schoolchildren with speech problems. We sent an invitation letter to the parents of children through their children identified with atypical behaviors with the assistance of the classroom teachers. Out of 82 invited, 80 responded positively and demonstrated their readiness by signing a consent letter to be available and actively participate in the study. A pretest was conducted on the participants to determine their eligibility and baseline data before the REBT intervention was given. Thus, out of 80 students 74 were identified to be eligible for the study given the different behavioral characteristics that they exhibited and high irrational beliefs related to depression. Other inclusion criteria included, must be a school child within the age range 6 to 14 years, and being identified by the instruments (measure of irrational belief and depressive symptoms). The researchers equally considered that any schoolchildren currently taking an external examination, and who is presently receiving any form of psychological treatment from either clinic or from others in an attempt to reduce psychological symptom must not be included in the study. Exclusion from the study was implied when the potential participant did not meet any of the study criteria. The eligible participants were randomized to the treatment and control groups. In doing this, we adopted a simple random allocation sequence by using random allocation software developed by Saghaei.[35] A total of 37 participants were assigned to the intervention group and 37 were assigned to the control group. See Figure 1 for further reference. All the processes required before commencement of the intervention program lasted till April 2021. During the recruitment exercise, we took adequate care to ensure that we eliminate selection bias during participants' recruitment and randomization by concealing the assignment and/or allocation sequence from the study

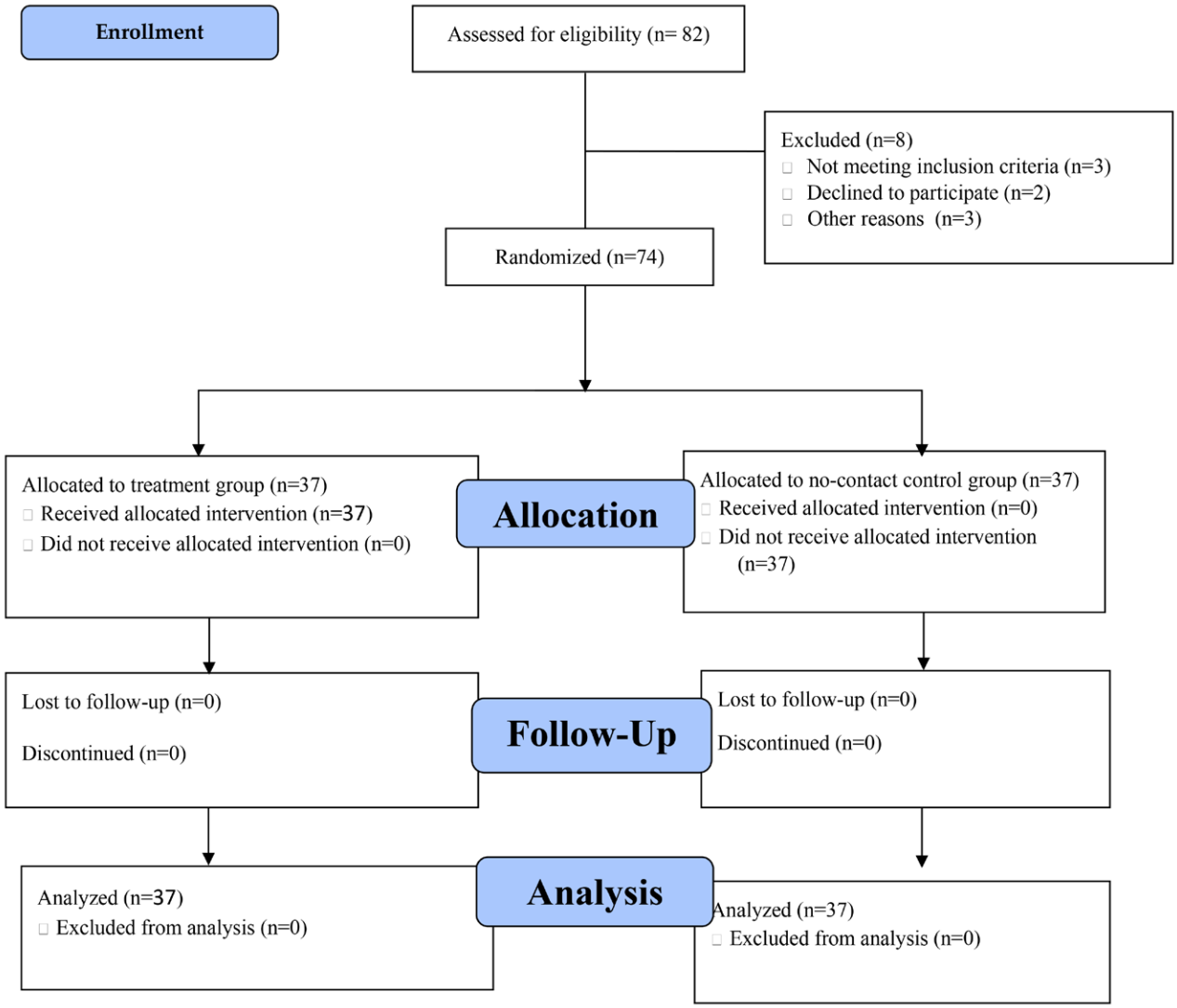

Figure 1. Consort diagram.

participants and research assistants. This equally reduced the risk of potential bias, which may unveil the group that received the actual intervention.

The intervention program started officially on September 14 to December 9, 2021. The therapist followed the manual from the first session to the last session. The sessions started with the introduction, establishment of therapeutic rules and regulations, objective of the program, and motivation of the participant for activities and discussions. Session 2 addresses issues related to atypical behaviors while session 3 focuses on fact versus opinion; how people can incur negative self-worth themselves and interpret the failure negatively. Sessions 4 and 5 dealt with developing irrational thoughts, and emotional and behavioral consequences of irrational regarding atypical behaviors. Sessions 6 and 7 focus on teaching how to create a new worldview, 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). Sessions 8, 9, and 10 focus on engaging in active discussion and practices on how to dispute irrational thoughts, and irrational beliefs, and replace those irrational thoughts and beliefs with rational ones (REBT lessons and practice). Session 11 focused on teaching sustainable positive self-worth skills and reinforcing rational thought-based behavior. The participants were helped to develop rational thinking skills like the ability to recognize the unhealthy, negative emotional consequences of their demandingness for perfection and how to rationally assess and adjust to those thoughts. Finally, in session 12 the program was terminated. However, the participants in the control group received conventional counseling for 12 sessions that equally lasted for 1hr each like their counterparts in the treatment group. At the end of the intervention period, a posttest (Time 2) for depression was administered to both groups using the same measure after 2 months of completing the study. Till the end of the program, we did not record any absences among the participants, hence, all fully participated and completed all the sessions. However, we made a provision of both light and heavy refreshments like drinking water, food, snacks, and soft drinks which we distributed to all those in attendance at the end of each intervention program in order to achieve maximum compliance. This was not to induce a response from the participants but to sustain their attention span. During the therapeutic program, some techniques like time consciousness, disputation, restructuring, cognitive alliance, reframing, problem-solving skills, and reinforcement among others. At the end of every therapeutic session, the participants were given practice exercises beginning from session 2 which were often reviewed before the commencement of the next session program.

2.2. Design

The study adopted a pretest-posttest and later test with a randomized control group design.

2.3. Intervention, therapist, and treatment integrity checklist

We adopted a well-designed rational emotive behavioral therapeutic depression manual developed by David et al[33] The REBT treatment manual for this study was used here to assist schoolchildren with atypical behaviors experiencing depression to acquire rational emotive behavioral skills and techniques to address, manage and cope with their psychological and behavior-related problems. The manual was designed to cover 12 weeks of 12 session program that lasted for one hour of each therapeutic session. The techniques adopted were modifications and identification of maladaptive social and emotional skills like modeling, bibliotherapy, behavioral rehearsal, relapse prevention, positive self-statement, behavioral contingencies, etc.

Two professionals in cognitive theory with 12 years' experience were employed to implement the REBT treatment manual developed for this study. The therapists were 2 females with an average of 45years of age. The experts with PhD with basic orientation in counseling psychology.

To ensure that all the steps slated for this study are attained by the interventionist, we formulated a treatment integrity checklist. Research assistants were employed to monitor the implementation process of the treatment and to ensure that no step is left out. They were instructed to note down the time at which each session started and ended, record the number of participants at each session, and monitored participants' commitment to the program, how they asked and responded to questions, and how they complied with the take-home assignment given to them.

2.4. Dependent measure

Goldberg depression scale[33] is an 18-item instrument that assesses the degree of depression in an individual. The objective of the scale is to identify possible depressive symptoms affecting individuals like those with atypical behaviors. The instrument is rated on 6-point Likert response options of 5 = very much; 4 = quite a lot; 3 = moderately; 2 = somewhat; 1 = just a little and 0 = not at all. The depressive measure was weighted and rated as 5 with 6 points; 4 with 5 points; 3with 4point; 2 with 3 points; 1 with 2 points and 0 with 1 point. This showed that the higher the number, the more severe the depression. A study conducted in Nigeria with Goldberg depression scale indicated an internal consistency of 0.82 α using Cronbach Alpha.[4] In this study, the internal consistency is 0.78 alpha which indicates that the instrument is valid and reliable.

2.5. Data analysis

The research data from three assessment levels were conducted using SPSS version 28. Particularly, a two-way ANCOVA was employed as a data analysis technique. The researchers adopted ANCOVA for the following reasons: All of the participants were randomly assigned to treatment and control groups; the independent variable had two levels (REBT and no-contact control groups); the dependent variable, depressive symptoms, was measured as continuous data; depression scores at the pretreatment, post-treatment, and later tests were simultaneously analyzed as sub-dependent variables; and the efficacy of rational emotion behavior therapy in enhancing mental health was examined. Using partial eta squared, the intervention's effect size was reported.

3. Results

Table 1 shows the multivariate analysis of the effect of the intervention on depression. The total mean/standard deviation of depression scores at the pretest, post-test, and later test for the REBT group was 66.52 (7.25), 55.23 (3.36), and 53.89 (2.23), respectively. The results imply that participants' depression mean and standard deviation scores positively changed from the first assessment to the last assessment. On the other hand, the total mean/standard deviation of control group participants' depression scores at the pretest, post-test, and later test were 67.36 (4.69), 67.34 (4.71), and 67.36 (4.69), respectively. Indicating that there was no change but rather a steady increase in the mean depression value scores observed among participants in the no-contact control group over time.

Table 1

Multivariate analysis of the effect of treatment on depression.

Factors	Group	Time	Gender	Mean	N	*F*	*P*	η_p^2	ΔR^2
	Treatment group	Pretest	Male	70.89 (7.89)	15				
			Female	62.67 (3.69)	17	0.381	.539	0.005	0.204
			Total	66.52 (7.25)	32				
	Control group		Male	66.42 (4.84)	24				
			Female	68.61 (4.30)	18				
			Total	67.36 (4.69)	42				
	Treatment group	Posttest	Male	57.05 (2.71)	15				
			Female	53.63 (3.11)	17	163.148	<.001	0.703	0.698
			Total	55.23 (3.36)	32				
	Control group		Male	66.43 (4.83)	24				
			Female	68.56 (4.38)	18				
			Total	67.34 (4.71)	42				
	Treatment group	Later test	Male	54.50 (1.70)	15				
			Female	53.36 (2.54)	17				
			Total	53.89 (2.23)	32	229.842	<.001	0.769	0.758
	Control group		Male	66.43 (4.83)	24				
			Female	68.61 (4.30)	18				
			Total	67.36 (4.69)	42				
Group * Gender		Pretest				18.077	<.001	0.208	
		Posttest				8.319	.005	0.108	
		Later test				3.363	.071	0.046	

Based on the main effect due to REBT, the result show that at the pretest, no significant difference between the participants in the treatment and those in the control groups as indicated by the dependent measure, $F(1,73) = .381$, $P = .539$, $\eta_p^2 = 0.005$, $\Delta R^2 = 0.204$, respectively. After the treatment, the post-test results show a significant improvement due to REBT treatment among participants as measured by dependent measure, $F(1,73) = 163.148$, $P < .001$, $\eta_p^2 = 0.703$, $\Delta R^2 = 0.698$ respectively. In addition, a later test result shows that the significant improvement of the treatment was sustained in favor of those in REBT-group, $F(1,56) = 229.842$, $P < .001$, $\eta_p^2 = 0.769$, $\Delta R^2 = 0.758$ respectively. The effect size values of 0.703, and 0.769 at the post-test and later test are indications of 70.3%, and 76.9% significant improvement linked to REBT treatment.

The result shows that does not moderate the outcome of REBT treatment, $F(1,73) = .096$, $P = .757$, $\eta_p^2 = 0.001$. Regarding the interaction between groups and gender during treatment, the data indicated a significant interaction effect on participants' depression scores $F(1,73) = 8.319$, $P = .005$, $\eta_p^2 = 0.108$, but at the later test stage, there was no significant interaction effect on depression scores $F(1,73) = 3.363$, $P = .071$, $\eta_p^2 = 0.046$. Figure 2 further supports the interaction effect between group and gender.

3.1. Discussion and conclusion

The main objective of this study was to investigate the impacts of REBT on depressive symptoms in schoolchildren with atypical behaviors in Enugu state, Nigeria. At the pretest level, both participants in the treatment and control groups showed no significant difference in depression scores. Hence, post-treatment, the depression score obtained indicated a very significant difference between the participants exposed to treatment and those not exposed to any treatment. Remarkably, the effect of the treatment among the schoolchildren was maintained at later tests. This validates the effectiveness of REBT in dealing with psychological disturbances including depressive symptoms among schoolchildren as in past studies.[4,36] The finding of this study is in agreement with the result of previous studies on the effectiveness of cognitive theories.[37,38] Ugwuanyi et al[4] showed the effectiveness in treating depressive symptoms in a sample of parents of children with intellectual disabilities. These studies were conducted in the same region and the positive outcomes remain consistent. A similar study revealed psychological intervention is an effective strategy for treating mood-related problems.[39] Equally, Obiweluozo, et al[25] reported psychological and social improvement among individuals with psychosocial challenges when exposed to philosophies of REBT. Interestingly, the same philosophies guided the present study and that of Obiweluozo et al[25] REBT, however, had a significant effect in decreasing psychological symptoms of anxiety among populations with myriad disabilities.[40] Hence, the effectiveness of psychological treatment in decreasing psychological distress like depression and its concomitant effects and increasing higher level of adaptation, adjustment, and mental healthiness in schoolchildren with atypical behaviors like ours is recognized and recommended

Similarly, the results from the empirical studies showed that REBT is significant in decreasing depressive symptomology of population with blindness exposed to intervention when compared to those in the no-intervention control group.[5] Also, the findings of this study agreed with the past studies that depressive symptoms could be accomplished using evidence-based psychological and behavioral techniques.[41–44] The findings of this study are in alignment with findings from recent studies that demonstrated the effectiveness of REBT treatment in decreasing depressive symptoms of population with disabilities in Nigerian.[3,45–47] Given this, the findings of this study showed that REBT is very significant in treating depressive-related disorders among schoolchildren orchestrated by atypical behaviors. With all this evidence from various studies across cultures, regions, and ages, similar outcomes were reported, indicating that REBT will stand for the test time.

This present study agreed with other past studies that argues that, among the various approaches for managing depression, REBT is considered an integrative therapy for overcoming both depressive thinking and other unhelpful thoughts that are part of those conditions of the mind that usually occur along with depressive symptoms.[30] The goal of the REBT program is to help clients/become more logical thinkers who can use cognitive, emotive, and behavioral techniques to deal with irrational

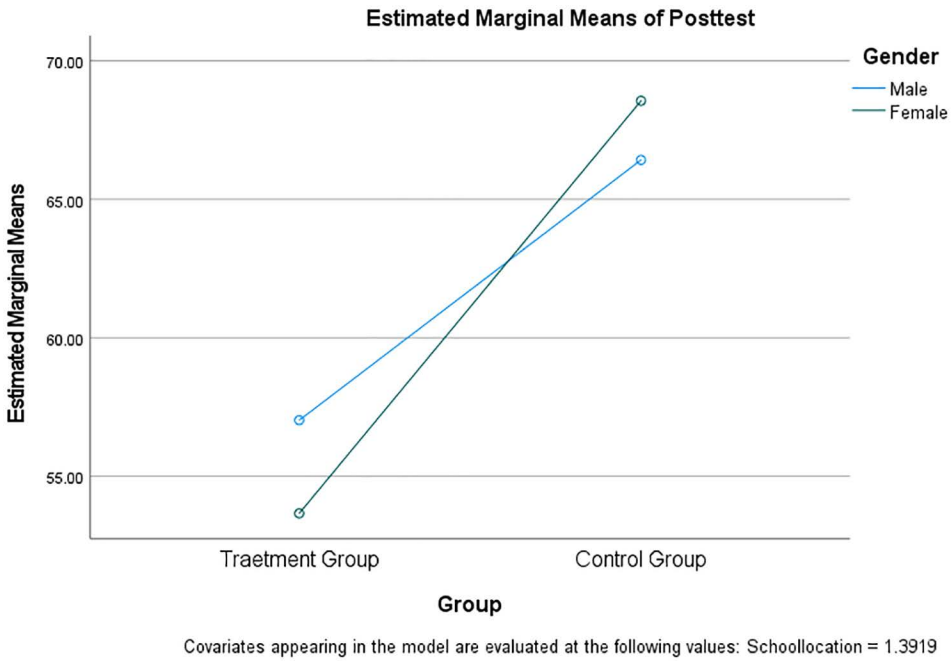

Figure 2. Interaction effect of group and gender.

and dysfunctional emotions that could lead to psychological and emotional distress like depression.[48] As the mechanisms of change, REBT therapies focus on the clients' belief structures, attitudes, and thought patterns because these are crucial to how REBT applies its therapeutic effects. Therefore, a successful REBT program helps a person demonstrate a positive shift in attitude and thinking as well as an improvement in their self-limiting beliefs.

3.2. Practice implications

The atypical behaviors and its concomitant effects have exposed schoolchildren to depression and have given rise to their physio-psycho behavior and emotional problems. Given the findings of the previous and current studies, REBT was found to be very much beneficial and effective in cushioning the cause-effect of depressomatic symptoms among the school population with atypical behaviors. Thus, therapists are required to apply rational-emotive techniques to decrease the adverse effects of depression and its related symptoms in schoolchildren with atypical behaviors. The researchers, therefore, recommend that REBT practitioners should always adopt the principles of REBT since it has consistently shown to be effective in disputing irrational beliefs among populations with psychological problems like depression while counseling. Serious effort is required from school authorities to initiate and implement the REBT programme in their various schools since its effect is observed in assisting students to develop healthy behavior, and emotions and become more rational in thinking. Thus, participants exposed to REBT treatment like ours should be made to know that their physio-psychological problems like depression could automatically be solved once REBT principles and techniques are adequately employed

3.3. Strengths of the study

Some significant issues that account for the strength of this research work is noted. As noted earlier, pointing to the limited psychological treatment services for schoolchildren with depressive symptoms. Besides that, little or no research has been documented on vulnerable populations in primitive locations, especially in Nigeria. To fill these gaps, the present study has offered reports on one of the vulnerable populations. Doing this, this research has reported the impacts of REBT in decreasing depressive symptoms experienced by schoolchildren with atypical behaviors. This study has also contributed to depression, REBT, and atypical behaviors literature. We argue that this study has a new mental dimension in approaching psychological well-being. Notwithstanding, we urge further contributions from future researchers to advance the practice and implementation of REBT assumptions in rural locations and across populations with/without disabilities. Also, conducting research on cognitive triads and processes is a complex issue but the current study has added value to that by using a randomized controlled method.

3.4. Limitations of the study

Given that the current study achieved its objectives, some limitations were remarked on which future research should consider. Firstly, the study was restricted to only schoolchildren in a special school selected for this study which indicates the sample size. Geographically, it was also conducted only in Enugu State excluding other states in southeastern Nigeria. Therefore, the subsequent study should endeavor to reach out to other populations with or without disabilities but experiencing depression as a result of irrational thinking to enable them to benefit from the REBT treatment package.

Secondly, the measure adopted in this study for evaluation is quantitative, neglecting qualitative assessment. Hence, the researchers suggested other measures like observation, interviews, and focus group discussions be used to provide qualitative data that could assist to strengthen the quantitative measures. The study equally failed to measure the level of atypical behavior the participants were experiencing before administering REBT intervention.

Thirdly, we also regret that there was no measure of irrational beliefs considering that the intervention treated depressive symptoms due to irrationality. Therefore, further studies should measure the degree to which every participant is experiencing atypical behaviors. All these accounted for the limitations of the current study.

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