Assessing the Efficacy of Rational Emotive Behavior Intervention for Visually Impaired Upper Basic School Children with Negative Self-belief/Personal Value System

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Abstract

School children living with blindness have been reported to struggle with value system and an unrealistic decision-making process. This study examined the efficacy of rational emotive behavior intervention (REBT) in reducing the negative self-belief/personal of upper basic school children living with blindness. A group-randomized trial design was adopted using 56 primary school children who are living with blindness. The participants received a value-based rational emotive behavior program and were assessed at three points using PVS and ABS-2-AV. Analysis utilizing ANCOVA showed that there was no significant difference between the treatment and control groups in initial negative self-belief/maladaptive value using ABS-2-AV and PVS. At post-treatment, the effect of V-REBP was significant in changing negative self-belief/maladaptive value and follow-up assessment respectively, in favor of the treatment group. The result of this study was further supported by previous studies (e.g. Ejekwu in J Emot Dev 1(1):23–35, 2017) which argue that REBT is significantly effective in reducing maladaptive personal value systems, erroneously conceived school goals among the visually impaired population. Given the significant impact of the rational emotive behavior intervention, rational-emotive experts practicing in special schools can use REBT techniques to alter the maladaptive value systems in individuals living with blindness.

Keywords REBT · Value-based rational emotive behavior program · Negative self-belief · Personal value system · Upper basic school · Children Living with Blindness

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Introduction

Values are established enduring beliefs about what certain things and behaviours that are so dear to an individual (Immigration Advisers Authority, 2020). A 'value' is a fundamental variable that usually establish beliefs that is interrelated to the worth of type of behaviours. If a student holds values and beliefs, it could affect the quality of school engagement, social relationships and emotional reactions. It is what you value that you think about, behave, and act upon leading to a particular experience. It is students' values and beliefs that controls experience. Belief system is a psychological construct developed from values and there is commitment leading a specific standard of life (Immigration Advisers Authority, 2020). Therefore, beliefs could be classified as a type of values. For instance, value that relates to happiness and career success.

Personal Value System (PVS) is the personalized opinion and perception of worth towards self, others, and immediate situations (Adekola, 2018). PVS encompasses recognition, trust, self-esteem, and personal worth (Iwu, 2019). PVS is categorized as either positive or negative (Akaraka, 2009). PVS is positive when trust, recognition, self-esteem, and personal worth are guaranteed and directs actions (Amose, 2017). Conversely, the Negative Personal Value System (NPVS) is devoid of importance in life issues and goal pursuit (Asuk, 1988). Furthermore, Negative Personal Value System (NPVS) is engrossed with failure, depression, anxiety, mistrust, low self-esteem, and low personal worth (Asuk, 1988). NPVS is commonplace with p2017eople living with blindness (Dasari, 2017). Across Nigeria, Schoolchildren Living with Blindness (SLB) including those in upper basic schools suffer from irrational thoughts, beliefs, and unfounded compounded negative perception compared to other physically challenged people (Amadi, 2018; Obi, 2016; Oriji, 2017). NPVS is found to correlate significantly with negative belief system among people living with blindness (PLB) (Asodike, 2018).

About 2.2 billion students are living with blindness across the globe (World Health Organization, 2019), and in Africa, there are about26.3million of this number (WHO, 2020). Evidence shows that a worrisome 87% of SLB in Nigeria struggle with irrational and erroneous value system (Martins, 2018). NPVS also hampers social development (Schwartz, 1992). These students develop a negative value system possibly because of hostile cultural and school environments and unsupportive school systems (Afam, 2009). According to Okechukwu (2019), a reasonable number of SLB has NPVS. Existing literature has shown that NPVS of SLB cut across social, emotional, and academic dimensions (Ekeh, 2016). Socially, SLB find it very difficult associating with other students (Ekeh, 2016). They display a high level of social incompetence and poor skill management. Students Living with Blindness (SLB) detest gregariousness in school (Ekeh, 2016). They also feel inferior to freely participate in extra-curricular school activities (Asodike, 2018).

Emotionally, SLB has profound rash behavior that culminates in a negative attitude, and this is often linked to negative value placement (Ewurum, 2018).

NPVS disrupts emotional development (Schwartz, 1992), low self-concept, self-esteem, aggressive behaviors, and mood distortion (Akaraka, 2009). It has been reported that negative attitudes towards self, resulting from NPVS, abound among SLB (Afam, 2009). Consequently, a negative personal value system in many of the school children Living with Blindness would affect their attitude and behavior (Theodorson & Achilles, 1969) and sometimes leads to poor emotional development (Pant & Joshi, 2016). Unrealistic NPVS of SLB further triggers emotional instability (Parks-Leduc et al., 2015).

Academically, Negative Personal Value System (NPVS) of SLB do not support academic orientation and achievement (Hughes, 1995), school adjustment (Okechukwu, 2019), and realization of academic goals and objectives (Ojumu, 2016). NPVS leads to cognitive dissonance among SLB and as such disrupts their academic orientation and performance (Oriji, 2017). SLB also records low concentration in class due to mystic value perception (Sharma, 2006). In academic setting, it is value system of the learners to decides whether to become achievers or hedonists. Beside, past studies have established the relationship between personal value and academic grades. For instance, Ng and Renshaw (2002, 2003) reported that the former is correlated with latter. Matthews (2004) found a relationship between personal value and successful approaches that leads to learning. Parthiban and Ramkrishnan (2016) alsomreported that high academic achievers were found having high standard personal values. Another recent study also found a positive correlation between personal value and academic overall performance of learners (Khatun & Halder, 2019). In a study conducted by Bala (2014), it was demonstrated that academic grades are associated with value systems. Although, studies demonstrated a far reaching relationship between values and performance, researchers that have studied personal value with regards to academic achievement and grades are still few (Khatun & Halder, 2019). Despite the gap poorly framed personal value system has created between students and academic success, academic performances, grades, and academic achievement yet substantial intervention studies are lacking (Koscielniak, & Bojanowska, 2019).

Based on this backdrop and unsatisfactory display of NPVS by SLB due to irrational thoughts and behavior value system models, this study, therefore, suggests that REBT-therapy could be effective in disputing mystical and dysfunctional thoughts and beliefs on PVS of SLB.

The core aim of Rational Emotive Behavior Therapy (REPT) propounded by Ellis (1957) is to dispute and correct erroneous, negative and irrational thoughts and beliefs. REPT tries to move the client from an irrational behavioral and thought system to a more clear and justifiable thought and belief system. Clients fraught with uncertainty can have their hopes restored through REPT. The rate at which people practice negative thoughts and behaviors could be corrected through the application of REPT (Froggatt, 2005). The aftermath effect of irrational beliefs and thoughts cannot be fathomed in the social, physical, academic, and emotional dimensions of human growth and development (Gowon, 2012).

Previous studies have shown that rational-emotive strategies are significantly effective in improving the quality of life and wellbeing of people who are visually impaired (Kumar, 2009). Since the NPVS of visually impaired persons is hinged

around low self-concept, negative attitude, poor socialization, and poor behavioral and emotional dispositions (Uzomba, 2011), we propose that REBT would be effective in the reduction of irrational beliefs or distorted personal values among upper basic school children living with blindness in a select part of Nigeria. In this study, the researchers hypothesize that NPVS or self-disbeliefs will be significantly reduced when exposed to the REBT-intervention compared to a no-contact control group at Time 2 and Time 3.

Method

Ethical Clearance

This study received ethical clearance and permission from the Research Ethics Committee of the Faculty of Education of University of Nigeria. Parents and guardians of the students lent their informed consent through letters of consent. The researchers strictly adhered to and took cognizance of the research principles of the American Psychological Association.

Design

In this study, we adopted ramdomised controlled trial (RCT) group design. This design permitted researchers to randomly assign subjects into experimental group and comparison group. RCT is guided with principles of a high-quality. This means that RCT-design is known to address use of randomization, placebos, and double-blind methods in a study. RCT has been utilised by a good number of past studies (Agboeze et al., 2020; Ogba et al., 2019; Ugwuanyi et al., 2020a, 2020b, 2020c).

Measures

Personal Value Scale (PVS) developed by Scott (1965) was used to elicit information from the respondents. PVS is a 60-item instrument used to measure the participants' values. It is a self-report scale with 12-subscales with six items each. The PVS was structured with three-point Likert options of *Always Dislike (1), Depends on Situation (2)* and *Always Admire (3)*. The coefficients that ranged from 0.55 to 0.78 for the PVS short form showed its internal consistency, while that of the long form was from 0.80 to 0.89 as computed through Cronbach Alpha (Braithwaite & Scott, 1991). The two instruments were revalidated to ascertain that they both measure the same construct through convergent construct validity with coefficients that ranged from 0.66 to 0.81 (Braithwaite & Scott, 1991). Besides, the researchers established an internal consistency reliability coefficient of 0.77 in the Nigerian context. Some of the items that measures beliefs were used in the measure of values because it is someone's beliefs that can be used to measure the degree of what the person values (Abiogu et al., 2021). Considering values and beliefs in the field of positive psychology, past studies stated that the two constructs are tied upon

each other (Prinzing, 2019). The former precedes the latter in that beliefs are built on value (Abiogu et al., 2021; Vyskocilova et al., 2015) hence the belief systems are determined by the standard value system sets (Vyskocilova et al., 2015). That is value is a key variable that creates beliefs. In same vein, emotional and behavioral disposition is inextricably significantly related to value system (Schwartz, 1999). Since value system determines people perceptions, attitudes, behavior, and emotion (Vyskocilova et al., 2015; Jensen, 2003), beliefs cannot be separated from value and can be used to measure each other (Abiogu et al., 2021). This demonstrated that if an individual has negative value system, he/she is prone to distorted behavioural responses. Beside, past studies (e.g. Koscielniak & Bojanowska, 2019; Matthews, 2004; Parthiban & Ramkrishnan, 2016) has shown that values relate students' academic performance (grades). In this study, we used PVS because it relates to academic outcomes such as grades, completion of school. Some of the items that addressed learners' academic grades, performance, and achievement include "*studying hard to get good grades in school, never cheating or having anything to do with cheating situations, even for a friend, helping another achieve his/her goals, even if it might interfere with your own, being able to get people to cooperate with you.*" Therefore, the cognitive interpretation of personal values could determine academic behaviours (Koscielniak & Bojanowska, 2019). Considering if this measure relates to academic outcomes such a grades, completion of school, items like "*having a strong intellectual curiosity, studying constantly in order to become a well-educated person, working hard to achieve academic honors, being an intellectual, studying hard to get good grade in school*" are a good example of how PVS measured academic outcomes. Consistently, value scholars believed that value has strong impacts on academic performance as it helps to make treasurable decision (Abiogu et al., 2021; Koscielniak & Bojanowska, 2019; Schwartz, 2003). Noting that if the value is negative there will be academic dishonest, poor performance. Also PVS is not entirely a measure of beliefs as other dimensions of personal value system were contained in the measure. Beliefs items are addressed in PVS because belief is a component of personal value system.

The second instrument employed for the study was a measuring scale developed by Hyland et al. (2014), known as Attitudes and Belief Scale 2-Abbreviated Version (ABS-2-AV). The ABS-2-AV is a 24-item self-report scale that measures four dimensions of irrational beliefs. The scale was structured in line with a five-point Likert scale of *Strongly Disagree = 1 to Strongly Agree = 5* (Hyland et al., 2016). This means that the higher the scores, the greater endorsement of a given belief process (Hyland et al., 2016).

Participants and Procedure

The participants were 56 primary school children living with blindness in Enugu state, Nigeria. The power of the sample size was ascertained using GPower 3.1 software (Faul et al., 2007). The demographic characteristics of the participants are presented in Table 1.

Table 1 Demographic characteristics of the participants

Characteristics	REBT group n (%)	Waitlist control group n (%)	Statistic χ^2	Sig.
Gender				
Male	16 (57.1)	14 (50.0)	0.287	0. 592
Female	12 (42.9)	14 (50.0)		
Age				
16 years and below	7 (25.0)	7 (25.0)	0.099	0.952
17–19 years	12 (42.9)	13 (46.4)		
20 years and above	9 (32.1)	8 (28.6)		
Religious affiliation				
Christianity	14 (50.0)	15 (53.6)	0.125	0.939
Islam	8 (28.6)	8 (28.6)		
Others	6 (21.4)	5 (17.9)		
Ethnicity				
Igbo	11 (39.3)	10 (35.7)	0.316	0.957
Hausa	4 (14.3)	5 (17.9)		
Yoruba	5 (17.9)	6 (21.4)		
Others	8 (28.6)	7 (25.0)		
State				
Ebonyi	9 (32.1)	9 (32.1)	0.550	0.908
Abia	4 (14.3)	6 (21.4)		
Anambra	6 (21.4)	5 (17.9)		
Others	9 (32.1)	8 (28.6)		
Position in the family				
First	8 (28.6)	5 (17.9)	1.803	0.614
Second	6 (21.4)	10 (35.7)		
Third	9 (32.1)	9 (32.1)		
Fourth	5 (17.9)	4 (14.3)		
Parents edu				
Primary	5 (19.9)	4 (14.3)	0.669	0.716
Secondary	10 (35.7)	13 (46.4)		
Tertiary	13 (46.4)	11 (39.3)		
Family size				
5 and below	8 (28.6)	6 (21.4)	1.188	0.756
6–10	10 (35.7)	13 (46.4)		
11–15	4 (14.3)	5 (17.9)		
16 and above	6 (21.4)	4 (14.3)		

n, number of participant; REBT, Rational Emotion Behaovioural Therapy; %, percentage; χ^2, Chi-square; sig., associated probability

The inclusion or eligibility criteria for participants included that (1) the participant must have been diagnosed using the guidelines of International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) of World Health

Organization, (2) the participant must be in regular/inclusive school, (3) they must complete expression of interest form, and, (5) the student must be identified by a teacher as being visually impaired. The exclusion criteria included the(1) health status of the participants, (2) typical developing students, (3) people in special schools, (4) those that are receiving treatment from counselors, etc., (5) inability to complete the expression and self-concept form were not included, and, (6) the process of selection of participants was implemented by the researchers. The researchers did not make the selection criteria known, to avoid bias.

At the end of the selection process, 56 participants were recruited from 69 students who completed and submitted an expression of interest form and whose parents completed the written consent form. The 56 recruited participants were screened at Time 1 using PVS and ABS-2-AV. The assessment aimed to ascertain the baseline of their condition. The participants were grouped into two (Treatment group: 28 participants and no-contact control group: 28 participants)—see consort flow diagram (Fig. 1) of participants randomization for details.

The participants in the treatment group were exposed to a value-based rational emotive behavior program (V-REBP) while those in the no-contact control group were held constant without access to V-REBP. The researchers were aware that the no-contact control group had the right to access the intervention they were denied.
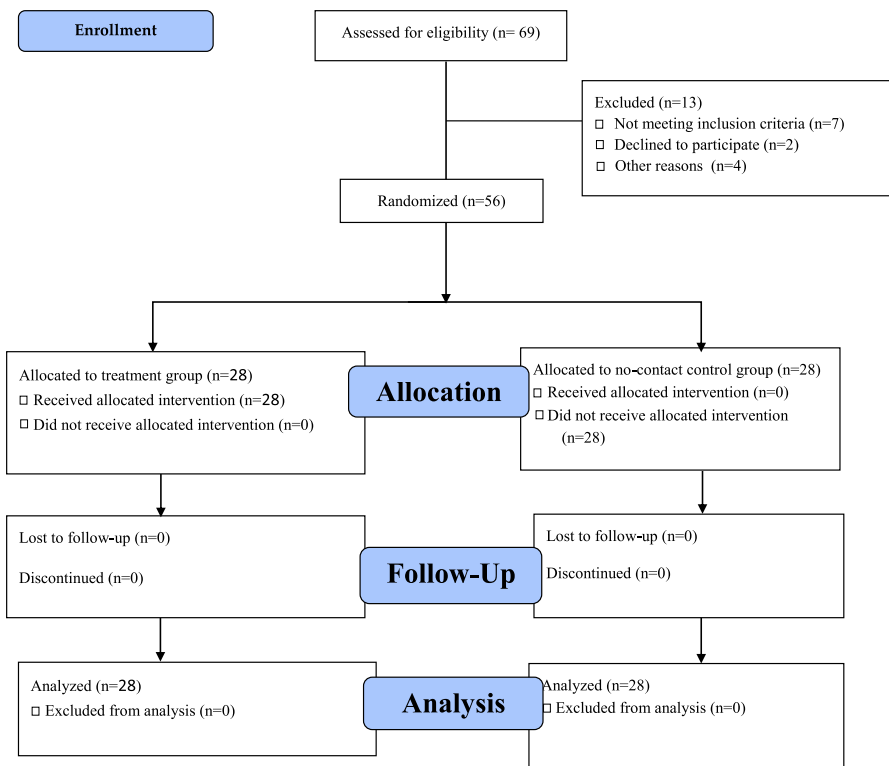

Fig. 1 Participants flow diagram

The ethical implication of not involving the no-contact group is acknowledged. The treatment group was administered with V-REBP by therapists using Igbo and English Languages because of the participants' bilingual language development. These therapists are counselors with Ph.D. as their highest qualification with more than seven years of cognate knowledge and experience on administration of REBT therapy. The treatment ran from November 2018 to February 2019 in Enugu state, Nigeria. This period enabled the participants to receive intervention for 12 weeks. Each of these sessions was accompanied by revisions and feedbacks. Interestingly, all the participants actively and duly participated in the 12 sessions, showing a 100% compliance level. The researchers provided two coaster buses that conveyed the participants to Enugu State. Within this period, the researchers provided food worth 5 US dollars for each attendee. After the sessions, both the participants in the treatment group and those in the no-contact control group were assessed in Time 2. A 1-month follow-up meeting was arranged after six months of testing to ascertain the students' retention level. The follow-up contact happened once a week (for a total of four weeks) and marked the end of the therapy with the third assessment (Time 3). The breakdown of the intervention procedure is shown in Table 2.

Intervention

A value-based Rational Emotive Behavior Program (V-REBP) developed in line with the principles of REBT was the treatment plan (Abiogu et al., 2020a, 2020b). The V-REBP manual is a social, psychological, and educational program geared towards correcting irrational beliefs associated with negative value system among SLB. The manual was a composite of 12 sessions lasting for a period of 12 weeks. The mechanism was one session for one hour every week. Relaxation, hypnosis, meditation, behavioral exercise, cognitive disputation, and biofeedback were the strategies employed (Abrams & Ellis, 1994; Fried, 1990; Goleman, 1993).

Treatment Fidelity

Firstly, the integrity of the treatment was assessed using participants' completion of the intervention. Participant attendance records were collected weekly and included the number of treatment sessions that the participant attended as well as the specific topics covered during each treatment session. Secondly, the integrity check of the treatment was ascertained by ensuring that the therapists adhered to the instructions, keeping the time, and ensured adequate implementation of the intervention components. Two external raters, who are also part of the project observed the process of the intervention as the therapists implement treatment sessions at the venue using a treatment integrity rating scale. The treatment behavioral checklist involved important therapeutic elements of each intervention session and required for full implementation of the 12 sessions. Each therapist was given opportunities to score the performance of participants and weekly implementation of each session. In addition, an external rater conducted 12 (100%) treatment integrity data sessions for treatment group.

Table 2 Structure of the V-REBP

Objectives	Weeks	Sessions	Activities	Techniques
To familiarize present the participants with the operational documents and guidelines for the programme	1	1	Formal introduction and familiarization by a way of stating names, ethnicity etc. exchange of pleasantries, rapports and the establishment of norm, standard and decorum for the programme commencement	Therapeutic agreement
Education on negative personal value system	2–3	2–3	Apt explanation of **PVS** Explanation of negative personal value system	Bodily and mood observation technique
Highlighting of signs and symptoms of negative PVS	4–5	4–5	Brief explanation of the traits, characteristics, signs and symptoms associated with negative **PVS** Exposition on how these signs and symptoms are related to negative personal value system Brief revision, and take home activities were done	Bio-feedback, relaxing practical exercise techniques
Identification of negative PVS related to behaviour	6	6	How to identify conditions associated with negative personal value system Highlighting meaning of irrational conceptions of **PVS**	Hypnosis and practice activities were the techniques
The subjects were given detailed and in-depth knowledge on the basis of the programme and its purposes	7	7	The meaning of REBT was divulged to the students. REBT was related negative personal values Discussions were initiated on how to overcome conditions, events that are associated negative personal value system Brief revision, and take home activities	Cognitive disputation, mood observation and practical exercise were the techniques
The researchers endeavoured to determine the philosophies and irrational beliefs that preoccupy the subjects about their negative PVS	8	8	The ideologies, philosophies and irrational beliefs systems that becloud negative value systems were identified and disputed through clarifications Brief revision, and take home activities	Bio-feedback, relaxation, meditation and Yoga skills were the practical techniques

Table 2 (continued)

Objectives	Weeks	Sessions	Activities	Techniques
To dwell in positivism	9	9	Management of negative personal value system in the mist discouraging environmental conditions and challenging situations. Dealing with those identified irrational beliefs and emotional prompts that trigger negative personal value systems. Brief revision, and take home activities (conclusion of Self-Help form)	Cognitive disputation, behaviou and practice exercises, hypnosis, meditation, Soya skills and problem-solving are the techniques
The subjects were positioned to reduce unjustifiable and erroneous beliefs as well as over-evaluation of phenomena. They were also helped in the ways to make use of accurate beliefs and rational self-assessment	10	10	The subjects were briefed how to have positive reflection on reality as to accurately apply them tackle life personal value situations. They were properly briefed on how to address and dispute any form of absolutism, imminent undue inferences and self-defeating ideologies. Brief revision, and take home activities	Cognitive disputation, behavioural practice, meditation, Yoga skills, problem-solving approach and Rational-emotive behavioural techniques
To help make life meaningful again through self-worth development	11	11	How to device coping strategies and face realities of life instead of the delimiting factors of negative **PVS**	Behavioural practices. Coping strategies, problem-solving approach, rational-emotive behaviour, value redefinition skills, cognitive dismissal approach and practice activities
Follow-up	12	12	Brief revision, and take home activities and termination of the session	

Design and Data Analysis

The study adopted a group-randomized trial design. The data from pretest, post-test, and follow-up were subjected to statistical analysis using SPSS version 18. Specifically, two-way ANCOVA was used as a method of data analysis. ANCOVA was used by the researchers for the following reasons: (1) the participants were completely randomized into treatment and control groups; (2) the independent variable with two levels (REBT and no-contact control groups) were categorical; (3) the dependent variable which is Personal Value System was measured as continuous data; (4) Personal value data at pre-treatment, post-treatment, and follow-up levels were simultaneously analyzed as sub- dependent variables; (5) the effectiveness of rational emotion behavior therapy in enhancing personal value among participants was determined using Analysis of Covariance. The effect size of the intervention was reported using Partial Eta squared. The assumption of the homogeneity of variance was determined using Leven's test of equality of variance ($F=1.223$, $p=0.311$ before treatment; $F=2.394$, $p=0.079$ after treatment and $F=0.651$, $p=0.586$ at follow-up).

Results

The REBT group comprised 16 males (57.1%) and 12 (42.9%) females; the no-contact control group comprised 14 males (50.0%) and 14 (50.0%) females. From the analyses of results, it can be seen that no significant gender difference was observed among the study participants ($\chi^2=0.287$, $p=0.592$). In the REBT group, seven participants (25.0%) were within the age of 16 years and below, twelve (42.9%) were within the age of 17–19 years, and nine (32.1%) were within the age of 20 years and above. In the no-contact control group, seven participants (25.0%) were within the age of 16 years and below, 13 (46.4%) were within the age of 17–19 years, eight (28.6%) were within the age of 20 years and above. No significant age difference was observed among the participants ($\chi^2=0.099$, $p=0.952$).

Regarding religious affiliation, in the REBT group, 14 participants (50.0%) were of the Christian religion, eight (28.6%) were of Islamic religion, while six (21.4%) were of other religions. In the no-contact control group, 15 participants (53.6%) were of the Christian religion, eight (28.6%) were of Islamic religion, while three (17.9%) were of other religions. No significant differences were observed in religious affiliation among the participants ($\chi^2=0.125$, $p=0.939$).

Regarding ethnicity, in the treatment group, eleven participants (39.3%) were from Igbo tribe, four (14.3%) were Hausa, five (17.9%) were Yoruba, and eight (28.6%) were from other ethnic backgrounds. In the no-contact control group, ten participants (35.7%) were Igbo, five (17.9%) were Hausa, six (21.4%) were Yoruba, and seven (25.0%) were from other ethnic backgrounds. No significant difference was observed in ethnicity among the study participants ($\chi^2=0.316$, $p=0.957$).

In terms of state of origin, in the treatment group, nine participants (32.1%) were from Enugu state, five (14.3%) were from Imo state, six (21.4%) were from Anambra state and nine (32.1%) were from other states. In the no-contact control group,

nine participants (32.1%) were from Enugu state, six (21.4%) were from Imo state, five (17.9%) were from Anambra state and eight (28.6%) were from other states. No significant difference was observed in state of origins among the participants ($\chi^2 = 0.550$, $p = 0.908$).

Regarding position in the family, in the REBT group, eight participants (28.6%) were of the first position in the family, six (21.4%) were of the second position in the family, nine (32.1%) were of the third position in the family, and five (17.9%) were of the fourth position in the family. In the no-contact control group, five participants (17.9%) were of the first position in the family, ten (35.7%) were of the second position in the family, nine (32.1%) were of the third position in the family, and four (14.3%) were of the fourth position in the family. No significant difference was observed for position in the family among the participants ($\chi^2 = 1.803$, $p = 0.614$).

Concerning the level of parents' education, in the treatment group, five participants (19.9%) were of parents with primary school education, ten (35.7%) were of parents with secondary school education, and 13 (46.4%) were of parents with tertiary education. In the no-contact control group, four participants (14.3%) were of parents with primary school education, 13 (46.4%) were of parents with secondary school education, and eleven (39.3%) were of parents with tertiary education. No significant difference was observed in their parents' level of education ($\chi^2 = 0.669$, $p = 0.716$).

In the REBT group, eight participants (28.6%) were from family size of five and below, ten (35.7%) were from family size of 6–10, four (14.3%) were from family size range of 11–15 and six (21.4%) were from family size of 16 and above. In the no-contact control group, six participants (21.4%) were from family size of five and below, 13 (46.4%) were from family size of 6–10, five (17.9%) were from family size range of 11–15 and four (14.3%) were from family size of 16 and above. No significant family size difference was observed among the participants ($\chi^2 = 1.188$, $p = 0.756$) (Table 3).

Result based on personal value: At pretest, male and female participants had mean personal value scores of (X = 101.88, SD = 8.40), and (X = 104.00, SD = 5.44) respectively. For the no-contact control at pretest stage, male and female participants had mean personal value scores of (X = 110.93, SD = 3.99), and (X = 101.64, SD = 8.94) respectively. At post-test, male and female participants in REBT group had mean personal value scores of (X = 140.50, SD = 7.47), and (X = 139.08, SD = 6.40) respectively. For the no-contact control group, the mean personal value scores of male and female participants were (X = 140.50, SD = 7.47), and (X = 139.08, SD = 6.40) respectively. At follow-up stage, male and female participants in REBT group had mean personal value scores of (X = 143.43, SD = 4.90), and (X = 140.08, SD = 5.85) respectively; and for the no-contact control group, the mean personal value scores of male and female participants were (X = 131.07, SD = 5.57), and (X = 125.21, SD = 3.87) respectively.

The overall mean/standard deviation of personal value scores at pretest, post-test, and follow-up stages for REBT group were 102.79 (7.24), 139.89 (6.94), and 142.57 (5.49), respectively. The mean result presented in Table 2 indicates that there was a continuous increase in the mean personal value scores of participants in the treatment group over time. For the no-contact control group, the overall

Table 3 Mean and standard deviation of participants in Personal value and Irrational beliefs for REBT and WC groups with regards to gender

Gender	Number		Pretest		Posttest		Follow-up	
	REBT	WCG	REBT	WCG	REBT	WCG	REBT	WCG
	N_1	N_2	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
Personal value								
Male	16	14	101.88 (8.40)	110.93 (3.99)	140.50 (7.47)	130.57 (5.79)	143.43 (4.90)	131.07 (5.57)
Female	12	14	104.00 (5.44)	101.64 (8.94)	139.08 (6.40)	122.57 (3.11)	140.08 (5.85)	125.21 (3.87)
Total	28	28	102.79 (7.24)	106.29 (8.28)	139.89 (6.94)	126.57 (6.11)	142.00 (5.49)	128.14 (5.57)
Irrational beliefs								
Male	16	14	97.42 (8.05)	103.64 (4.96)	42.16 (4.28)	44.58 (4.51)	40.72 (3.51)	41.92 (4.26)
Female	12	14	102.01 (5.43)	103.61 (3.26)	35.32 (5.91)	44.95 (4.65)	34.31 (6.04)	42.51 (5.83)
Total	28	28	99.39 (7.30)	103.62 (4.12)	39.23 (6.02)	44.77 (4.50)	37.97 (5.67)	42.23 (5.02)

REBT, Rational Emotion Behaovioural Therapy; WCG, waitlist control group; N_1, number of participants in REBT group; N_2, number of participants in WCG group

mean/standard deviation of personal value scores at pretest, post-test, and follow-up stages were 106.29 (8.28), 126.57 (6.11) and 128.14 (5.57) respectively. Although there was a steady increase in the mean personal value scores of participants in the no-contact control group over time, it was not as high as those of the treatment group (Table 4).

Descriptive result based on irrational beliefs: At pretest, male and female participants had mean irrational belief scores of (X = 97.42, SD = 8.05), and (X = 102.01, SD = 5.43) respectively. For the no-contact control at pretest stage, male and female participants had mean irrational belief scores of (X = 103.64, SD = 4.96), and (X = 103.61, SD = 3.26) respectively. At post-test, male and female participants in REBT group had mean irrational belief scores of (X = 42.16, SD = 4.28), and (X = 35.32, SD = 5.91) respectively. For the no-contact control group, the mean irrational belief scores of male and female participants were (X = 44.58, SD = 4.51), and (X = 44.95, SD = 4.65) respectively. At follow-up stage, male and female participants in REBT group had mean irrational belief scores of (X = 40.72, SD = 3.51), and (X = 34.31, SD = 6.04) respectively; and for the no-contact control group, the mean irrational belief scores of male and female participants were (X = 41.92, SD = 4.26), and (X = 42.51, SD = 5.83) respectively.

The overall mean/standard deviation of irrational belief scores at pretest, post-test, and follow-up stages for REBT group were 99.39 (7.30), 39.23 (6.02), and 37.97 (5.67), respectively. The mean result presented in Table 2 indicates that there was a continuous reduction in the mean irrational belief scores of participants in the treatment group over time. For the no-contact control group, the overall mean/

Table 4 Multivariate analysis of variance showing the effect of REBT on Personal Value in Nigeria as measured by Personal Value Scale (PVS)

Source	Dependent variable	Type III sum of squares	df	Mean square	F	Sig.	Partial Eta squared
Corrected model	PrePV	806.036[a]	3	268.679	5.312	0.003	0.235
	PostPV	2946.208[b]	3	982.069	27.637	0.000	0.615
	FPV	3005.574[c]	3	1001.858	39.049	0.000	0.693
Intercept	PrePV	606,523.000	1	606,523.000	11,992.578	0.000	0.996
	PostPV	983,050.074	1	983,050.074	27,664.968	0.000	0.998
	FPV	1,009,354.769	1	1,009,354.769	39,341.038	0.000	0.999
Groups	PrePV	155.330	1	155.330	3.071	0.086	0.056
	PostPV	2421.621	1	2421.621	68.149	0.000	0.567
	FPV	2569.367	1	2569.367	100.145	0.000	0.658
Gender	PrePV	177.615	1	177.615	3.512	0.067	0.063
	PostPV	307.158	1	307.158	8.644	0.005	0.143
	FPV	293.907	1	293.907	11.455	0.001	0.181
Groups * gender	PrePV	451.017	1	451.017	8.918	0.004	0.146
	PostPV	150.127	1	150.127	4.225	0.045	0.075
	FPV	21.701	1	21.701	0.846	0.362	0.016
Error	PrePV	2629.893	52	50.575			
	PostPV	1847.774	52	35.534			
	FPV	1334.140	52	25.657			
Total	PrePV	615,388.000	56				
	PostPV	998,839.000	56				
	FPV	1,026,020.000	56				
Corrected total	PrePV	3435.929	55				
	PostPV	4793.982	55				
	FPV	4339.714	55				

$\alpha = 0.05$, PrePV, pre-treatment stage personal value score; PostPV, post-treatment stage personal value score; FPV, follow-up stage personal value score

[a]R squared $= 0.235$ (Adjusted R squared $= 0.190$)

[b]R squared $= 0.615$ (Adjusted R squared $= 0.592$)

[c]R squared $= 0.693$ (Adjusted R squared $= 0.675$)

standard deviation of irrational belief scores at pretest, post-test, and follow-up stages were 103.62 (4.12), 44.77 (4.50) and 42.23 (5.02) respectively. Although there was a steady decrease in the mean irrational belief scores of participants in the no-contact control group over time, it was not as high as those of the treatment group.

Data analysis shows the (i) main effect due to REBT, (ii) main effect due to gender, and (iii) interaction effect groups and gender to Personal value. For the main effect due to REBT outcomes for the participants in the treatment group, it was found over the three periods, that before the treatment, there was no significant

difference between the treatment and control groups in initial mean personal value scores among participants as measured by PVS, $F(1, 56) = 3.071$, $p = 0.086$, $\eta_p^2 = 0.056$, $\Delta R2 = 0.190$ respectively. At the post-treatment the effect of REBT was significant in increasing the mean personal value scores among the participants as measured by PVS, $F(1, 56) = 68.149$, $p = 0.001$, $\eta_p^2 = 0.567$, $\Delta R2 = 0.592$ respectively. After the post-treatment, the follow-up result showed that $F(1, 56) = 100.145$, $p = 0.001$, $\eta_p^2 = 0.658$, $\Delta R2 = 0.675$ respectively. The η_p^2 values of 0.567, and 0.658 as measured by PVS at post-treatment and follow-up levels respectively indicated that REBT accounted for 56.7%, and 65.8% increase in personal value respectively.

In terms of gender, data analysis reveals that before the treatment, there was no significant influence of gender on the mean personal value scores of participants as measured by PVS and IB, $F(1, 56) = 3.512$, $p = 0.067$, $\eta_p^2 = 0.063$. During post-treatment and follow-up stages, there was a significant influence of gender on mean personal value scores of participants as measured by PVS, $F(1, 56) = 8.644$, $p = 0.005$, $\eta_p^2 = 0.143$; $F(1, 56) = 11.455$, $p = 0.001$, $\eta_p^2 = 0.181$ respectively. The η_p^2 values of 0.143, and 0.181 at post-treatment and follow-up levels indicated that REBT accounted for 14.3%, and 18.1% increases in personal value among participants, respectively (Table 5).

Concerning interaction effect of groups and gender after treatment, data shows that there was a significant interaction effect in the mean personal value score among participants as measured by PVS, $F(1, 56) = 4.225$, $p = 0.045$, $\eta_p^2 = 0.075$ whereas at follow-up levels, there was no significant interaction effect in the mean personal value score among participants as measured by PVS, $F(1, 56) = 0.846$, $p = 0.362$, $\eta_p^2 = 0.016$. The η_p^2 values of 0.075, and 0.016 at post-treatment and follow-up levels indicated that REBT accounted for 7.5%, and 1.6% increases in personal value among participants, respectively.

The Table showed that at the post-treatment the effect of REBT was significant in increasing the mean irrational belief scores among the participants as measured by ABS, $F(1, 56) = 21.740$, $p = 0.001$, $\eta_p^2 = 0.295$, $\Delta R2 = 0.349$ respectively. After the post-treatment, the follow-up result showed that $F(1, 56) = 12.590$, $p = 0.001$, $\eta_p^2 = 0.195$, $\Delta R2 = 0.257$. The η_p^2 values of 0.295, and 0.195 as measured by ABS at post-treatment and follow-up levels respectively indicated that REBT accounted for 56.7%, and 65.8% reduction in irrational beliefs score respectively.

In terms of gender, data analysis reveals that during post-treatment and follow-up stages, there was a significant influence of gender on mean irrational belief scores of participants as measured by ABS, $F(1, 56) = 6.264$, $p = 0.016$, $\eta_p^2 = 0.108$ and $F(1, 56) = 4.806$, $p = 0.033$, $\eta_p^2 = 0.085$, respectively. The η_p^2 values of 0.108, and 0.085 at post-treatment and follow-up levels indicated that REBT accounted for 10.8%, and 0.85% reduction of irrational belief among participants, respectively.

Concerning interaction effect of groups and gender after treatment, data shows that there was a significant interaction effect in the mean irrational belief score among participants as measured by ABS, $F(1, 56) = 7.773$, $p = 0.007$, $\eta_p^2 = 0.130$; whereas at follow-up levels, there was no significant interaction effect in the mean personal value score among participants as measured by ABS, $F(1, 56) = 6.990$, $p = 0.011$, $\eta_p^2 = 0.118$. The η_p^2 values of 0.130, and 0.118 at post-treatment and follow-up levels indicated that

Table 5 Multivariate analysis of variance showing the effect of REBT on irrational belief in Nigeria as measured by Attitude and Belief scale

Source	Dependent variable	Type III sum of squares	df	Mean square	F	Sig	Partial Eta squared
Corrected model	ABSPOSTEST	751.980[b]	3	250.660	10.815	0.000	0.384
	ABSFEL-LOWUP	535.913[c]	3	178.638	7.347	0.000	0.298
Intercept	ABSPOSTEST	96,617.391	1	96,617.391	4168.618	0.000	0.988
	ABSFEL-LOWUP	88,081.824	1	88,081.824	3622.807	0.000	0.986
Groups	ABSPOSTEST	503.879	1	503.879	21.740	0.000	0.295
	ABSFEL-LOWUP	306.091	1	306.091	12.590	0.001	0.195
Gender	ABSPOSTEST	145.175	1	145.175	6.264	0.016	0.108
	ABSFEL-LOWUP	116.849	1	116.849	4.806	0.033	0.085
Groups * gender	ABSPOSTEST	180.165	1	180.165	7.773	0.007	0.130
	ABSFEL-LOWUP	169.949	1	169.949	6.990	0.011	0.118
Error	ABSPOSTEST	1205.221	52	23.177			
	ABSFEL-LOWUP	1264.283	52	24.313			
Total	ABSPOSTEST	100,727.201	56				
	ABSFEL-LOWUP	91,824.030	56				
Corrected total	ABSPOSTEST	1957.201	55				
	ABSFEL-LOWUP	1800.196	55				

[a] R squared = 0.384 (adjusted R squared = 0.349)

[b] R squared = 0.298 (adjusted R squared = 0.257)

REBT accounted for 13%, and 11.8% increases in irrational belief among participants, respectively.

The Table 6 shows that correlation between personal value system and irrational belief.

Table 6 Correlation between personal value system and irrational belief

	PrePV	PostPV	FPV	ABSPRE	ABSPOSTEST	ABSFEL-LOWUP
PrePV						
Pearson correlation	1					
Sig. (2-tailed)						
N	56					
PostPV						
Pearson correlation	0.039	1				
Sig. (2-tailed)	0.777					
N	56	56				
FPV						
Pearson correlation	− 0.030	0.949**	1			
Sig. (2-tailed)	0.829	0.000				
N	56	56	56			
ABSPRE						
Pearson correlation	− 0.030	− 0.273*	− 0.293*	1		
Sig. (2-tailed)	0.826	0.042	0.028			
N	56	56	56	56		
ABSPOSTEST						
Pearson correlation	0.049	− 0.409**	− 0.415**	0.089	1	
Sig. (2-tailed)	0.721	0.002	0.001	0.513		
N	56	56	56	56	56	
ABSFELLOWUP						
Pearson correlation	0.020	− 0.382**	− 0.371**	0.064	0.956**	1
Sig. (2-tailed)	0.885	0.004	0.005	0.640	0.000	
N	56	56	56	56	56	56

**Correlation is significant at the 0.01 level (2-tailed)

*Correlation is significant at the 0.05 level (2-tailed)

Discussion and Conclusion

The pretest result showed that the upper basic school children Living with Blindness had negative self-belief/maladaptive personal value systems both for the experimental and no contact groups as confirmed by the report that 80% of SLB have a personal negative value system (Uzomba, 2011) and also displayed irrational thoughts and beliefs (Jude, 2010). After the intervention, there was a significant reduction effect of Students Living with Blindness of negative personal value systems in the intervention group compared to the no-contact group. This showed that REBT was effective in the reduction of negative personal value systems. Our findings are also corroborated by the report by Ewurum (2018) confirming that negative behavioral and cognitive manifestations have a high chance of being corrected with REBT (Ewurum, 2018).

Furthermore, studies have shown that REBT can redress cognitive shortcomings (Kumar, 2009), behavior disbeliefs (Uzomba, 2011) social isolation, and solitary (Jude, 2010). The result of this study was further supported by Ejekwu (2017) who argued that REBT is effective in reducing erroneously conceived school goals among the visually impaired population. We also concluded that REBT can effectively reduce behavior maladjustment (Amose, 2017). Additionally, following the findings of the study, REBT effectively increased personal worth (Yusuf, 2001). Previous studies have also emphasized that REBT is efficacious in enhancing personal-social acceptance and relationships (Amose, 2017; Okafor, 1992).

Taken together, our study has shown that: (1) REBT can reduce NPVS of SLB; (2) A follow-up study by the researchers re-assured the effectiveness of REBT in NPVS reduction; and (3) the study was delimited to students living with blindness who had negative personal value systems. The study faced the following limitations: (1) the no-contact groups were not given REBT intervention, (2) the study did not expand its scope to deaf and dumb students. Future studies could integrate these shortcomings to expand the scope and understanding of physically challenged student populations.

Following the outcome of second dependent measure, this study supported empirical-based literatures that recorded significant improvement in participants with irrational beliefs who were exposed to REBT-approaches (Abiogu et al., 2020a, 2020b, 2021; Ede et al., 2020, 2021a). Similarly, studies that investigated erroneous feeling in children (Obiweluozo et al., 2021) and adults (Iremeka et al., 2021) in Nigeria showed that cognitive-behavioural methods had significant impacts in disputing core thoughts, feeling and unrealistic behaviours. The finding of this study agreed with psychoeducational-based studies that utilised cognitive-behavioural interventions in treating individuals with academic and social problems (Agah et al., 2020, 2021; Ede et al., 2021b; Ifeanyieze et al., 2021), Considering treatment outcomes of previous REBT and CBT studies that did randomized investigations, we suggest that people who may not have access to REBT professionals especially those in rural Nigeria should make use self-help approach.

The researchers, therefore, conclude based on the findings of this study, that REBT is valid, reliable, and very effective in the reduction of NPSV among SLB in sustaining the reduction of the NPSV for a reasonably long period. It also suggests that the irrational beliefs associated with negative personal value system was reduced using REBT-principles.

Practical Implications

This study will be useful for counseling-psychologists for the effective and efficient management of students with NPVS using REBT principles and techniques. This would enable the counseling-psychologists to improve on their expertise in the application of REBT in handling of personal value-based issues among students. Experts and practitioners can employ REBT mostly when students are embattled with erroneous and unjustifiable thoughts and beliefs. The application of REBT techniques and principles will go a long way in repositioning students who suffer

from poor self-worth and value. Clinical supports should be provided by experts of REBT in handling psychosomatic and social problems of SLB. It is foreseen that mismanagement of NPVS of SLB may become tantamount to poor cognitive development (Ewurum, 2018), negative attitude, aggression, and lack of interest in school activities (Amose, 2017).

The practice implications of the findings for the professionals in charge of children especially in primary schools e.g. childhood educators.

Declaration

Conflict of interest The authors declare that there was no conflict of interest during the fieldwork and writing of this paper.

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