Effects of rational emotive behavior coaching on occupational stress and work ability among electronics workshop instructors in Nigeria

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Abstract

Background/objective: This study examined the effectiveness of rational emotive behavior coaching (REBC) on occupational stress and work ability in a sample of electronics workshop instructors in Nigeria.

Methods: A pretest–posttest control group design was used. The participants were 108 electronics workshop instructors in technical colleges in the south-east of Nigeria who met the study inclusion criteria. Data were collected using 3 questionnaires and analyzed using a repeated measure analysis of variance and Mann–Whitney U test.

Results: REBC led to a significant reduction in occupational stress experienced by the electronics workshop instructors in the REBC group compared to their counterparts in the waitlist control group. Furthermore, the scores for occupation-related irrational beliefs of the instructors in the REBC group were significantly lower than those in the waitlist control group at the end of the coaching intervention. The work ability of the REBC group was significantly better than that of the waitlist control group. Finally, the effects in the REBC group were significantly sustained at 3-month follow-up.

Conclusion: REBC is a time-efficient and solution-focused therapeutic modality for assisting occupationally stressed employees in a Nigerian setting. REBC can be used for improving and maintaining work ability of workers. The researchers hope that occupational health professionals and health counselors would extend this approach to tackle psychological issues limiting employees’ effectiveness and performance in the Nigerian work environment and in other countries.

Abbreviations: $\eta^2$ = partial eta squared, ABCDE = activating event, beliefs, consequences, disputing, and effective new philosophy, EWIOSS = Electronics Workshop Instructors’ Occupational Stress Scale, F = repeated measures ANOVA test, M = mean, REBC = rational emotive behavior coaching, REBT = rational emotive behavior therapy, U = Mann–Whitney U test, WAI = Work Ability Index, WIOIBS = Workshop Instructors Occupational Irrational Beliefs Scale.

Keywords: coaching, electronics workshop instructors, occupational maladjustment, occupational stress, occupation-related irrational beliefs, rational emotive behavior coaching, work ability

1. Introduction

Occupational stress represents a major health hazard for many workers and employees around the world.\textsuperscript{[1,2]} Occupational stress accounts for much of the physical illness, substance abuse, and family problems experienced by all categories of workers and has been linked to low productivity, absenteeism, and increased rates of accidents on and off the job.\textsuperscript{[3–5]} Several studies have indicated the presence of occupational stress among workers in Nigeria.\textsuperscript{[6–10]} In addition, Ekpenyong and Inyang\textsuperscript{[11]} reported an overall prevalence of work-related disorders of 39.25% among a group of workers in Nigeria. Azodo and Ezeja\textsuperscript{[12]} also showed that 1 in every 10 respondents reported severe occupational stress in Nigeria. According to Uzoigwe et al.,\textsuperscript{[13]} the workers are burdened by work demands, which invariably affects the work–family role conflict they experience and leads to deterioration of their occupational health.

Occupational stress can lead to maladjustment in the workplace.\textsuperscript{[14–17]} Occupational stress can also affect work ability of workers.\textsuperscript{[18]} Ikegami et al.\textsuperscript{[19]} argued that mental health problems among some workers can be attributed to occupational stress. According to a recent finding, stress was associated with a modest-to-strong decline in work ability of workers.\textsuperscript{[19]} A previous study also showed that occupational stress affects work ability.\textsuperscript{[20]} Furthermore, Xu et al.\textsuperscript{[21]} found that the main factors influencing work ability include role insufficiency, psychological, social, and vocational strain. Occupational stress that manifests in vocational, psychological, physical, and interpersonal forms\textsuperscript{[22,23]} could lead to occupational maladjustment among electronics workshop instructors, if not tackled.

As teaching staff, the workshop instructors are amenable to occupational stress. In fact, 60% to 70% of teaching staff show...
addition, the cognitive interpretation of stress in a person has both physiological and psychological effects. Thus, was coined by Kodish, another pioneer of the approach. The term REBC was hypothesized to be signiﬁcantly reduced, when compared with their counterparts in the waitlist control group. Finally, these gains were hypothesized to be signiﬁcantly sustained at 3-month follow-up.

2. Methods

2.1. Ethical approval

Approval for conducting this study was granted by the Faculty of Vocational and Technical Education at the University of Nigeria, Nsukka (No: VTE/ERA/0045). Written permission was granted by the school principals and informed consent was obtained from the participants after explaining the objective of the research to them. It should be noted that an ethical approval is necessary for studies (e.g., human-interventional studies) conducted by researchers in both medical and nonmedical institutions. All studies and experiments involving human participants need to obtain ethical approval in order to protect the interests, rights, and welfare of participants and to maintain academic standards.

2.2. Study design

The study used a pretest–posttest control group design.

2.3. Study participants

The participants were 108 electronics workshop instructors in technical colleges in the south-east of Nigeria who met the study inclusion criteria (Fig. 1). The demographic characteristics of the participants are presented in Table 1.

Table 1 shows that the mean (M) age of the REBC group was 27.85 ± 4.36 years, and that of the control group was 26.53 ± 3.41 years ($\chi^2 = 0.959, P = .343$). The REBC group comprised 46 men (42.9%) and 9 women (8.3%); the waitlist control group comprised 46 men (42.6%) and 7 (6.5%) women ($\chi^2 = 0.213, P = .629$). In the REBC group, 33 (30.6%) had 1 to 3 years’ experience, and 22 (20.4%) had 4 or more years’ experience. The participants in the waitlist control group, 31 (28.7%) had 1 to 3 years’ experience, and 9 (8.3%) had 4 or more years’ experience ($\chi^2 = 0.025, P = 1.00$). Of those in the REBC group, 8 (7.4%) were single and 47 (43.5%) were married. For the participants in the waitlist control group, 9 (8.3%) were single and 44 (40.7%) were married ($\chi^2 = 0.121, P = .795$) (Table 1).

2.4. Measures

2.4.1. Electronics Workshop Instructors’ Occupational Stress Scale. The Electronics Workshop Instructors’ Occupational Stress Scale (EWISS) is a 14-item scale adapted from the Teachers’ Stress Scale by the authors of the present study to assess how stressful the participants perceived their job. The instructors were asked to indicate their perception of the level of

irrational beliefs, and work ability in a sample of electronics workshop instructors in Nigeria. The hypothesis for the present study was that REBC would significantly reduce the occupational stress experienced by the instructors in the treatment group compared to their counterparts in the waitlist control group. In addition, it was hypothesized that the instructors’ occupational irrational beliefs will be signiﬁcantly reduced, and their work ability will be signiﬁcantly improved, when compared with their counterparts in the waitlist control group. Finally, these gains were hypothesized to be signiﬁcantly sustained at 3-month follow-up.
stress on a 5-point scale (1 = not stressful, 2 = a little stressful, 3 = moderately stressful, 4 = very stressful, 5 = extremely stressful) in relation to 14 statements, which focused on the following: classroom management problems, poor student performance, lack of student motivation, helping students with special needs, workload pressure, time pressure, problems with school administration, dealing with colleagues, changes, and school attendance. The 14th item asked: “Over the past few months, how stressful have you found your job?” Individual M scores of 4.50 to 5.00 indicated a severe level of occupational stress. The EWIOSS was validated by 2 REBT practitioners, and another 2 experts in educational measurement and evaluation. Using the data from the 108 electronics workshop instructors, Cronbach $\alpha$ for overall reliability of the EWIOSS was 0.74.

Table 1
Demographic characteristics of participants.

| Characteristic       | REBC group (n, %) | Waitlist control group (n, %) | $\chi^2$ | Significance |
|---------------------|------------------|-----------------------------|---------|--------------|
| Gender              |                  |                             |         |              |
| Male                | 46 (42.9%)       | 46 (42.6%)                  | 0.213   | 0.788        |
| Female              | 9 (8.3%)         | 7 (6.5%)                    |         |              |
| Age                 |                  |                             |         |              |
| 27.85 ± 4.36        | 26.53 ± 3.41     | 0.959                       | 0.343   |              |
| Education           |                  |                             |         |              |
| BSc                 | 43 (39.8%)       | 44 (40.7%)                  | 0.403   | 0.629        |
| Masters & above     | 12 (11.1%)       | 9 (8.3%)                    |         |              |
| Years of experience |                  |                             |         |              |
| 1–3 y               | 33 (30.6%)       | 31 (28.7%)                  | 0.025   | 1.00         |
| 4 y and above       | 22 (20.4%)       | 22 (20.4%)                  |         |              |
| Marital status      |                  |                             |         |              |
| Single              | 8 (7.4%)         | 9 (8.3%)                    | 0.121   | 0.795        |
| Married             | 47 (43.5%)       | 44 (40.7%)                  |         |              |

* $\chi^2 =$ Chi-square, Mean ± SD = mean and standard deviation, n = number of participants in each group.
2.4.2. Workshop Instructors Occupational Irrational Beliefs Scale. The 30-item Workshop Instructors Occupational Irrational Beliefs Scale (WIOIBS) was adapted from the Teacher Irrational Beliefs Scale [39] by the present authors to assess the instructors’ irrational beliefs in their occupational setting. The instructors were asked to indicate on a 5-point scale the degree to which they agreed with an occupational irrational belief (1 = strongly disagree, 2 = disagree, 3 = not sure, 4 = agree, 5 = strongly agree). The items on the WIOIBS focused on typical areas of teaching, including classroom management problems, student learning/emotional and motivational problems, time and workload pressures, and problems with school administration. Individual M scores of 4.50 to 5.00 indicated a high level of occupational irrational beliefs. The validity of the WIOIBS was checked by 2 REBT experts, and 2 experts in educational measurement and evaluation. The overall reliability of the WIOIBS was $\alpha = 0.88$.

2.4.3. Work Ability Index. The Work Ability Index (WAI) is a validated self-assessment questionnaire developed by Tuomi et al. [42]. It is a 7-part self-assessment of current ability, work ability in relation to physical and mental demands of the job, reported diagnosed diseases, estimated impairment due to health status, sick leave over the last 12 months, self-prognosis of work ability in the 2 years to come, and mental resources of the individual. The WAI measures an employee’s work ability and helps define the necessary measures for its maintenance and promotion by helping to detect work-related health risks early. The response options for items in the WAI vary considerably; the minimum possible score is 7, and the maximum is 49. The WAI has four categories, with scores interpreted as follows: 7 to 27 points (poor), work ability should be reinstated; 28 to 36 points (moderate), work ability should be improved; 37 to 43 points (good), work ability should be supported; 44 to 49 points (excellent), work ability should be maintained. Test–retest reliability of the WAI from all 108 instructors was $r = 0.73$.

2.4.4. Procedure. The researchers and 3 assistants screened 235 electronics instructors in the technical colleges to identify eligible participants using the 3 questionnaires (EWIOSS, WIOIBS, and WAI). Participants were recruited from the technical colleges for a period of 2 months. A pretest was conducted before the REBC intervention (“Time 1”) to acquire baseline data. Those instructors ($n = 108$) with an extremely high level of occupational stress ($\geq 4.50$), high levels of occupational irrational beliefs ($\geq 4.50$), and poor WAI (7–27 points) were selected as participants. In addition to the set benchmark scores, additional inclusion criteria included: being employed as an electronics workshop instructor for the past 1 to 7 years, holding a minimum qualification of a bachelor’s degree in electronics, and being readily available for the study. Any volunteers who did not meet 1 or all of these criteria were excluded from the study.

All 108 eligible participants were randomly assigned to the REBC group or the waitlist control group. A simple randomization procedure was conducted in which the participants were asked to pick 1 envelope from a container. Each of the envelopes contained pressure sensitive paper labeled with “T” (for treatment group) or “WC” (for waitlist control). The random assignment produced a total of 55 participants for the REBC and 53 participants for the waitlist control condition.

The treatment process was based on the REBC intervention package developed by the present researchers. Participants in the REBC group took part in the REBC for 24 sessions, each lasting 60 minutes. Sessions were held twice per week for 12 consecutive weeks. At the end of the intervention, a posttest was administered to both groups (“Time 2”). Three months later, all participants attended 2 follow-up meetings, a week apart, which focused on terminating the therapy and ended with a third and final assessment (“Time 3”). Thus, the REBC intervention comprised a 14-week controlled trial. The REBC sessions were delivered in English by the present authors. All participants returned the questionnaires directly to the researchers after each assessment.
tional irrational beliefs and to help them overcome their stressful conditions and adjust to the work environment. During the coaching, the researchers ensured that individual participants readily understood the “ABCDE” mnemonic of REBT (activating event, beliefs, consequences, disputing, and effective new philosophy) so that they could effect changes in their thinking styles. The researchers used the ABCDE model to explain to the participants the connection between activating events in the workplace, beliefs about that event, and the emotional and behavioral consequences that may occur due to their beliefs. This procedure was implemented as suggested by other REBT practitioners.\(^{[47]}\) Homework tasks were given to participants at the end of each session. Although the researchers prepared a specific homework task for each session, individual participants were encouraged to suggest assignments themselves or to say “yes,” “no,” or that they would “consider it and let the researchers know” in response to any task suggested. Individual participants gave feedback about their progress at the start of each new session. Based on the REBC manual, follow-up periods provided opportunity for the participants to share with the researchers how they were able to put into use what they learned from REBC.

2.6. Data analysis

Repeated measures analysis of variance (ANOVA) was used to examine the effects of REBC. Effect size for this design was reported as the partial eta squared (\(\eta^2_p\)). The Mann–Whitney \(U\) test (\(U\)) was also conducted to compare changes across the REBC and waitlist control group participants. Statistical test-to-test for difference in demographic variables was completed using Chi-square (\(\chi^2\)). Screening for missing values and violation of assumptions was done using SPSS 20 (IBM Corp., Armonk, NY). The observed power for the present study was 1.00.

3. Results

Table 2 shows the study outcomes for the participants in the REBC group compared to waitlist control group over 3 periods. There were no baseline differences in EWIOSS results of occupational stress between participants in the treatment and waitlist control conditions: \(U = 1337, P = .461\). Similarly, no baseline differences were observed in WIOIBS assessment of occupational irrational beliefs between the 2 groups: \(U = 1338, P = .465\). There were also no baseline differences in the work ability between the 2 groups: \(U = 1383, P = .640\) (Table 2).

A repeated measures ANOVA of data collected from the EWIOSS revealed a significant treatment by time-interaction effect for occupational stress: repeated measures ANOVA test (\(F\)) (1,106) = 124.6, \(P = .000, \eta^2_p = 0.54\). The Mann–Whitney \(U\) test was also performed to examine changes in occupational stress within each group over time. A significant decrease from Time 1 to Time 2 was revealed for the REBC group: \(U = 400, P = .000\), whereas the waitlist control group showed no significant change in their score over the same period. Follow-up tests revealed a significant reduction in occupational stress for the REBC group: \(F\) (1,106) = 603.7, \(P = .000, \eta^2_p = 0.85\); \(U = 4, P = .000\), and no change for participants in the waitlist control group (Table 2).

There was a significant treatment by time interaction for occupational irrational beliefs, measured by the WIOIBS: \(F\) (1,106) = 159.9, \(P = .000, \eta^2_p = 0.60\). A significant decrease in irrational belief score was observed from Time 1 to Time 2 in the REBC group: \(U = 207, P = .000\), but not in the waitlist control group. Follow-up tests revealed a significant reduction in irrational beliefs in the REBC group: \(F\) (1,106) = 582.2, \(P = .000, \eta^2_p = 0.85\); \(U = 6, P = .000\), but not for those in the waitlist control group (Table 2).

Using the WAI, a repeated measures ANOVA revealed a significant treatment by time interaction effect: \(F\) (1,106) = 378.4, \(P = .98, \eta^2_p = 0.781\). The Mann–Whitney \(U\) test was also performed to examine changes over time within each group. There was a significant improvement in work ability from Time 1 to Time 2 for the REBC group: \(U = 0.000, P = .000\), whereas the waitlist control group showed no significant change over the same period. Follow-up tests revealed a significant increase in WAI: \(F\) (1,106) = 460.0, \(P = .000, \eta^2_p = 0.81\); \(U = 32, P = .000\) for the REBC group and no change in the waitlist control group (Table 2).

As can be seen in Fig. 2, significant reductions from baseline (Time 1) in M scores were observed in occupational stress at postintervention (Time 2) and follow-up (Time 3) in participants exposed to REBC, but not in those in the waitlist control group. As shown in Fig. 3, significant reductions in occupation-related irrational beliefs were observed at postintervention (Time 2) and follow-up (Time 3) in participants exposed to REBC, but not those in the waitlist control group.

Figure 4 showed that significant improvements in work ability were observed at postintervention (Time 2) and follow-up (Time 2).

Table 2

| Outcomes       | REBC Group (n=55) | Waitlist control group (n=53) |        |        |        | Df | F    | \(\eta^2_p\) | \(U\) |
|----------------|-------------------|-------------------------------|--------|--------|--------|----|------|------------|------|
|                | Time 1 M (SD)     | Time 2 M (SD)                 | Time 3 M (SD) |        |        |        |        |        |            |
| EWIOSS         | 44.18±5.36        | –                             | –       | 43.71±6.85 | –       | –       | (1,106) | 0.169 | 0.68       | 0.002 | 1337      |
|                | –                 | 22.32±12.9                    | –       | –       | 44.90±7.23 | –       | (1,106) | 124.6 | 0.000 | 0.54 | 400       |
| WIOIBS         | 103.2±12.8        | –                             | 15.66±5.07 | –       | –       | 48.12±8.35 | (1,106) | 603.71 | 0.000 | 0.85 | 4         |
|                | –                 | –                             | 102.10±13.8 | –       | –       | –       | (1,106) | 0.195 | 0.66 | 0.000 | 1388      |
| WAI            | 21.12±0.81        | –                             | 41.05±13.39 | –       | –       | 108.80±15.7 | (1,106) | 582.2 | 0.000 | 0.85 | 6         |
|                | 42.44±7.97        | 21.52±1.92                    | –       | 21.38±1.20 | –       | –       | (1,106) | 1.90 | 0.18 | 0.006 | 1383      |
|                | 44.34±6.49        | 22.42±3.71                    | –       | –       | –       | –       | (1,106) | 1094.14 | 0.000 | 0.98 | 0.000 | 32       |

\(\eta^2_p\) = partial eta squared, Df = degree of freedom, EWIOSS = Electronics Workshop Instructors’ Occupational Stress Scale, F = repeated measures ANOVA test, M = mean, \(n\) = number of participant in each group, SD = standard deviation, Sig. = level of significance, U = Mann–Whitney \(U\) test, WAI = Work Ability Index, WIOIBS = Workshop Instructors Occupational Irrational Beliefs Scale.
3) in participants exposed to REBC, but not those in the waitlist control group.

4. Discussion
The objective of this study was to investigate the effects of REBC on occupational stress and work ability in a sample of electronics workshop instructors in Nigeria. Results show that REBC led to significant reductions in occupational stress experienced by the instructors in the REBC group but not in their counterparts in the waitlist control group. These findings support the idea that helping teaching staff to develop a rational mindset to prepare for and deal with on-the-job adversity offers the promise of reducing occupational stress as well as strengthening hardiness, resilience, job satisfaction, and effectiveness. The present findings support those of Palmer and Gyllensten who stated that REBC could be used to prevent mental health problems, enhance performance, and reduce work-related stress. They also lend credence to the recent study by David et al. that showed that coaching enhances stress resilience and performance. The present findings also provide further evidence that REBT can be used by coaches to extend and deepen their understanding of psychological issues.

It was also found that the scores for occupational irrational beliefs of the participants in the REBC group were significantly lower than those of their counterparts in the waitlist control group at the end of the coaching intervention. This particular finding supports the idea that coaching intervention using the REBT model can effectively illustrate how irrational beliefs contribute to job-related stress, and its beneficiaries are able to resolve the concern and cope with the situation after coaching. Furthermore, the present study revealed that the work ability of the instructors in the REBC group was significantly better than that of their waitlist control counterparts. This supports the notion that the main focus of coaching in the work setting needs to be on effective and efficient job performance. The present findings, that REBC reduces work-related irrational beliefs and improves work ability, support the study by David et al. which found that changes in irrational and rational beliefs after a coaching program can function as mechanisms for boosting performance levels in the workplace. Last, the present findings indicate that the gains of REBC were significantly sustained at 3-month follow-up. Thus, the outcomes of the present study indicate that REBC, being easy to understand and directly applicable to client problems, is an appropriate tool for use in coaching. According to Sherin and Caiger, the therapeutic components of REBT can facilitate a coaching relationship. Further research on REBC is needed in other zones in Nigeria and in other countries, as well as with other categories of workers, to validate the present findings and help workers overcome stress and maladjustment in their occupational setting by becoming their own self-coach.
4.1. Study limitations

The present study purposely used a single group of workers, and the coaching intervention resulted in marked improvements in all 3 measures. However, the outcomes might differ when delivered to a different, or mixed, worker population. Furthermore, self-rated measures were used; interviewer-administered versions might yield different outcomes. It could also be argued that the period between the posttreatment and follow-up assessments was not long enough; to address this in future, REBC practitioners and researchers are recommended to conduct longitudinal observational studies with follow-up assessments at 6 or 12 months, or even longer.

Furthermore, waitlist control group is frequently used in psychotherapeutic studies. Some might argue that this method, however, lacks hints for specificity of the intervention tested. In future studies on REBC, there should be videotaping of the performance of the researchers with respect to the intervention group. This is essential for studies in the field of psychotherapy but can be omitted when validated manual is used.

One of the inclusion criteria was to be employed as an electronics workshop instructor for the past 1 to 7 years. Some practitioners may be wondering why the researchers limited their selection criteria to those participants with maximum of 7 years experience. In part, the researchers’ decision was purposive, given that literature is inconclusive with regard to the role of years of experience in teacher stress level. The participant inclusion criteria was further informed by some evidence that teaching staff with lesser years of experience are more amenable to work-related stress than the more experienced ones.[48,49]

4.2. Study implication

Given that occupational stressors could be perceived differently across occupational status groups,[18] occupational health therapists must consider this variable in future REBC research when intending to use a mixed group. Because of the significant costs of occupational stress experienced by teaching staff worldwide, and the negative impact on student learning outcomes, REBC should be extended to teachers in other countries. The findings of the present study also imply that REBC is a time-efficient and solution-focused therapeutic modality for assisting occupationally stressed electronics workshop employees in a Nigerian setting. REBC could be used to effectively dispute occupation-related irrational beliefs held by employees in Nigerian school settings and to increase their work ability. The authors hope that occupational health therapists and counselors can extend REBC interventions to tackle other psychological problems that limit the effectiveness and performance of workers in other environments, both in Nigeria and elsewhere.

5. Conclusion

Our findings indicate that REBC is an effective and time-efficient treatment modality for overcoming occupational stress experienced by electronics workshop instructors in Nigeria. REBC also significantly reduced the occupation-related irrational beliefs of the instructors. The work ability of the electronics workshop instructors improved significantly with REBC intervention. Finally, the present study shows that the gains of an REBC intervention are sustainable over time.

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