



Efficacy of Two Cognitive Based Therapies on Social Phobia among in School Adolescents in Oyo State, Nigeria

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Abstract

This study sought to determine the relative effectiveness of two cognitive behavioural therapies: Mindfulness-Based Cognitive Therapy (MBCT) and Acceptance and Commitment Therapy (ACT) on social phobia among secondary school adolescents. It also investigated the moderating effects of gender and age on the potency of treatment on the dependent measure. The study adopted the pretest, posttest, control group quasi experimental design with $3 \times 2 \times 2$ factorial matrix. The sample consisted of 160 adolescents randomly selected from 350 students with identified moderate or severe social phobia. These students were selected from three public secondary schools, one from each of the three senatorial districts of Oyo State, Nigeria. Schools were randomly assigned to treatment groups viz: MBCT (N = 53), ACT (N = 53) and Control (N = 51). Davidson's Social Phobia Inventory ($r = 0.85$) was adopted and used to capture pretest and posttest measures. Data collected were analyzed using Analysis of Covariance (ANCOVA) at 0.05 level of significance. Treatments had significant effect on adolescents' social phobia ($F(1,159) = 62.97$; $p < 0.05$). MBCT lowest mean ($\bar{x} = 14.90$), followed by ACT ($\bar{x} = 17.09$), while the Control group had highest mean score ($\bar{x} = 49.62$). The two moderating variables, gender and age of adolescents in this study had no significant effect on social phobia. The study concluded that MBCT and ACT were effective in reducing social phobia among adolescents in secondary schools.

Keywords: Social phobia, mindfulness based cognitive therapy, acceptance and commitment therapy, gender, age

Introduction

Adolescents generally are faced with a lot of challenges as they struggle to form a unique identity for themselves and cross to the stage of adulthood. One of the unidentified and under-reported mental health problems among them is social phobia also called social anxiety disorder (SAD). The National Institute of Mental Health (2000) describes it to be common in early adolescence and it is considered to be of global concern. Babalola and Ogunyemi (2016) reported that social phobia has the capacity to affect the recovery and productivity of people at individual level, communities and the country at large. Adolescents identified with social phobia may also be struggling with poor social networks, social skills and interpersonal relationships. Academically, they are prone to underachievement in school subsequently leading to absenteeism and poor performance. Social phobia has been also reported to be associated with some deviant and anti-social behaviours such as aggression, substance abuse, and suicide attempts among others. The concern of the present study was borne out of the inconsistency of many adolescents' performances under different social and environmental characteristics. For instance, there are students who would be very confident and perform brilliantly when they are alone within their comfort zones, but become uneasy consequently, they underperform when it comes to public performance. This happens severally during debate activities and public recitations in academic, secular or religious settings. In the same vein, some students who must have adequately prepared before the examination could become very uncomfortable during close supervision of examiners, and this might be one of the factors responsible for the underperformance and failure of students in schools (Donal & Oluyinka, 2017).

Lack of adequate attention to this global phenomenon among adolescents could lead to other psycho-socio problems and eventually affect the already weakened health system in Nigeria. More so, much attention has not been given to the specific

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intervention of social phobia among in school adolescents in Nigeria and there is dearth of literature in this area of interest. As a result, it becomes necessary to find out the appropriate psychotherapy that would be effective in dealing with social phobia in order to prevent secondary anxiety complications among school adolescents in order to make them relevant in the society and develop the courage to live happy and fulfilled lives.

There is also a wide range of findings by researchers on the various correlates of social phobia which include age and gender. While some findings support that the age of onset of social phobia is between 10 and 13 years, others state that it is usually between 14 and 24years. When these two age ranges are considered, majority of people in this category will fall within the secondary school age. This study therefore identified the effects of age and gender on social phobia among secondary school adolescents.

Although extensive literature review reveals the fact that most of the psychotherapies used for mental disorders are derived from Eastern and Western countries, considering the differences in the socio-cultural settings of these nations, it is imperative to also determine the effectiveness of these therapies in the Nigeria socio-cultural setting.

Several strategies have been used in the past to ameliorate the impact of social phobia; among these are cognitive-based therapies. According to Beck (2011) as cited in Roychowdhury (2017), one of the most effective psychotherapeutic approaches for the treatment of social phobia is Cognitive Behavioural Therapy (CBT). This also comes with several variations such as Rational Emotive Behavioural Therapy (REBT), Prolonged Exposure (PE), Problem Solving Therapy (PST), etc. Most recently, MBCT and ACT are also considered to be among the cognitive-based therapies that are effective in treating various anxiety disorders, including social anxiety disorder (SAD). Hayes (2004) in Zettle and Gird (2015) also support the fact

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that these interventions are part of the most recent generation of cognitive-behavioral therapies which have enjoyed the greatest empirical support in the prevention and treatment of depression. Although these two strategies have been confirmed to be efficacious in the treatment of several anxiety disorders in the world today especially in Europe and other advanced countries, there is the dearth of information and research on their efficacy among the Nigerian samples.

It is important to also note that most of the earlier mentioned psychotherapies, including MBCT and ACT which are the independent variables of this study, were derived majorly from Eastern and Western nations (Patel & Kim, 2007) with limited shreds of evidence of their effectiveness in Africa countries like Nigeria which is main focus of the present study.

MBCT has been confirmed to be effective in treating some psychological problems such as depression (Piet & Hougaard, 2011; Seligman, Reichenberg & Lourie, 2014); stress, chronic pain (Kabat-Zinn, 1990) and has assisted in developing life satisfaction among some respondents (Shapiro, Biegel & Brown, 2007) and some anxiety disorders (Perich, Manicavesagar, Mitchell, Ball & Pavlovic, 2013; Feixie, Zhou, Gong, Iennaco and Ding, 2014). MBCT basically makes use of cognitive behavioural therapy (CBT) procedures with the combination of some meditation exercises and reconstruction of thoughts that are capable of enhancing ones positive feelings in such a way that negative thoughts about self are eliminated (Hayes, Villatte, Levin & Hildebrandt, 2011).

Furthermore Acceptance and Commitment Therapy (ACT), which is the second intervention, considered by this work, is an integrated therapy with cognitive foundational strategies. The therapy was developed by Hayes in the 80s in line with the principles of radical behaviourism (Guadiano, 2016). It hinges on the Relational Frame Theory as an expansion of B. F. Skinner in 1957 (Hayes et al., 2001). In ACT,

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clients are trained in psychological skills that would them respond to their situations constructively with appropriate coping strategies (Bigllan & Hayes, 1996).

From the discourse so far on both MBCT and ACT, it is obvious that the therapies adopt mindfulness as one of the components of their treatment procedure which tends to make them seem identical. It was therefore pertinent for this study to establish their differences and also investigate their relative effectiveness. According to Devoto (2016), MBCT and ACT have some features in common, particularly in using mindfulness exercises and acceptance of situations as they are. Yet, they differ in the stage in which mindfulness exercises are used. While MBCT also makes use of meditation as a daily activity during treatments, ACT makes use of some other major cognitive strategies such as diffusion and defining of values.

A few studies have been carried out on the effectiveness of MBCT and ACT in the treatment of some mental health disorders in the United States of America, Asia and Europe; there is yet to be enough evidence to show that researchers have agreed on the relative effectiveness of these therapies in the African. As far as the researchers' understanding in terms of consultation on textbooks and other literature in this field is concerned, there is a dearth of research on the effectiveness of these therapies, particularly in combating social phobia among adolescents in Nigeria. Thus, this study aimed at finding out their applicability and effectiveness in the Nigeria socio-cultural setting, but more importantly in ameliorating social phobia among adolescents in Oyo State.

Some variables, which are considered to be determinants of the incidence of social phobia include age and gender which are considered to be important moderators in the use of the two therapies of concern on social phobia among adolescents.



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Majorly, the objective of this study is to find out the efficacy and relative effectiveness of MBCT and ACT in treating social phobia among school adolescents in Oyo State. Specifically, this study is also designed to determine:

The individual effectiveness of each treatment package (MBCT and ACT) on social phobia.

Identify the effects of moderating variables (age and gender) on the two treatments (MBCT and ACT) on social phobia among school adolescents in Oyo State.

Statement of the Hypotheses

The various null hypotheses that were tested for this study at 5% level of significance are:

1. The treatments will have no significant main effect on social phobia among secondary school adolescents.
2. Age will have no significant effect on social phobia among secondary school adolescents.
3. Gender will have no significant effect on social phobia among school adolescents.
4. There will be no significant interaction effect of treatments and age on social phobia among secondary school adolescents.
5. There will be no significant interaction effect of treatment and gender on social phobia among secondary school adolescents.
6. Age and gender will have no significant interaction effect on social phobia among secondary school adolescents.

7. Treatment, gender and age will have no significant interaction effect on social phobia among secondary school adolescents.

Method

This section presents the method that was used to carry out this research work. It explains the research design, population, sampling techniques that were used in selecting the participants and the instrumentation deployed for data collection with the appropriate data analysis.

Research Design

This study adopted a 3 x 2 x 2 pre-test – post-test control group quasi-experimental design. The independent variables of this study are treatments, which exist at three levels (Mindfulness-Based Cognitive Therapy, Acceptance and Commitment Therapy and control). The moderating variables are gender, which exists at two levels (male and female) and age of the respondents, which also exists at two levels (early adolescents; 10 – 13 years and late adolescents 14–17 years).

Population

The population of this study comprises all adolescents in JSS 1–2 and SSS1–2 attending public schools in the three Senatorial Districts (Oyo North, Oyo Central and Oyo South), Oyo State of Nigeria, which has thirty-three (33) local government councils. There are 356 public secondary schools in Oyo State with 236,000 students (Oyo State Ministry of Education, 2018).

Sample and Sampling Technique

The sample considered for this study was 160 adolescents who were randomly selected from three public secondary schools in Oyo North, Oyo Central and Oyo

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South senatorial district of Oyo State, Nigeria. 160 adolescents completed the entire treatment sessions.

The researcher thereafter used the Social Phobia Inventory (SPIN) to screen as many as 350 adolescents with symptoms associated with social phobia. The final stage of the sampling procedure involved a simple random sampling technique to select 60 respondents from the screened samples into each treatment group. Ballot papers were used for this purpose in such a way that gender and various age groups were represented which gave rise to 180 participants in all.

Instruments

Social Phobia Inventory (SPIN) developed by Davidson (2000) was adopted for this study. The Social Phobia Inventory is a 17 short item self-rating and a five-point Likert scale that covers the spectrum of fear, avoidance and physiological symptoms. Babalola and Ogunyemi (2018) reported that the inventory had a good internal consistency reliability coefficient of 0.85 using Cronbach's alpha method. The instrument was also revalidated for the purpose of the present study and the reliability was 0.82 using Cronbach's method for the internal consistency. Example of the items include: 'I am afraid of people in authority'; I avoid talking to people I don't know'; I avoid doing things or speaking to people for fear of embarrassment.

Data Collection

Basically, this study had three stages of data collection which are pre-test, treatment and post-test. In the pre-test stage, a social phobia inventory was used to collect data for the entry behaviour of the participants from the m the two experimental and one control groups. In the treatment stage, 8 weeks of therapy sessions on MBCT and ACT were administered to the experimental groups, while participants in the control group were taught basic communication skills as a placebo and each session lasted

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for 30 minutes. Refreshment was given to the participants at the end of each training session as a way of motivation.

At the post-test stage, the same social phobia inventory was given to all the groups to determine the efficacy and relative effectiveness of the treatments.

Result

Analysis of Covariance (ANCOVA) was used to test the entire hypotheses at a 0.05 level of significance using Statistical Package for Social Sciences (SPSS). A contrast of marginal predictions was used as a post hoc test to show the significant differences among various treatment groups and the control group.

This study presents the results of the data analysis in the order of the formulated research hypotheses using appropriate tables and charts, where necessary. The tabulated results are also subsequently interpreted accordingly.

Analysis of Covariance Result Presentation and Interpretation

The interest of this study is to examine the efficacy of the two cognitive-based therapies on social behaviour among secondary school adolescents while controlling for the pre-test phobia scores. Thus in this study, the pre-test phobia score is used as the covariates along with three other factors (age, gender and treatment) in an analysis of covariance setting. The output of the analysis of covariance, which comprises the dependent variable (post-test), independent factor (treatment), two random factors (gender and age) and one covariate (pre-test) is displayed in Table 4.2. Of key importance is the appropriateness of the model structure and the statistical significance, or otherwise, of the covariate, the main effects and the two- and three-way interaction effects, judging by the Fishers' F-statistic.

Analysis of Covariance Output

Source		Type III Sum of Squares	Degree of freedom	Mean Square	F	p-value	Partial Eta Squared
Intercept	Hypothesis	144.717	1.000	144.717	4.722	0.032	0.037
	Error	3773.272	123.121	30.647a			
Pretest	Hypothesis	1532.323	1.000	1532.323	47.954	0.000	0.246
	Error	4697.205	147.000	31.954b			
Treatment	Hypothesis	17312.629	2.000	8656.315	62.974	0.006	0.979
	Error	367.955	2.677	137.459c			
Gender	Hypothesis	5.568	1.000	5.568	0.057	0.837	0.032
	Error	166.675	1.697	98.235d			
Age	Hypothesis	14.830	1.000	14.830	0.250	0.686	0.155
	Error	80.965	1.365	59.311e			
Treatment & gender	Hypothesis	210.454	2.000	105.227	4.170	0.195	0.808
	Error	50.087	1.985	25.235f			
Treatment & age	Hypothesis	126.195	2.000	63.097	2.472	0.273	0.690
	Error	56.593	2.217	25.524g			
Gender & Age	Hypothesis	24.206	1.000	24.206	0.933	0.415	0.263
	Error	67.865	2.616	25.939h			

Treatment, Gender & Age	Hypothesis	50.510	2.000	25.255	0.790	0.456	0.011
	Error	4697.205	147.000	31.954b			

a. $.036 MS(\text{gender}) + .038 MS(\text{age}) - .038 MS(\text{gender} * \text{age}) + .964 MS(\text{Error})$

b. $MS(\text{Error})$

c. $.938 MS(\text{trt} * \text{gender}) + .980 MS(\text{trt} * \text{age}) - .940 MS(\text{trt} * \text{gender} * \text{age}) + .023 MS(\text{Error})$

d. $.929 MS(\text{trt} * \text{gender}) + 1.038 MS(\text{gender} * \text{age}) - .932 MS(\text{trt} * \text{gender} * \text{age}) - .035 MS(\text{Error})$

e. $.934 MS(\text{trt} * \text{age}) + .998 MS(\text{gender} * \text{age}) - .897 MS(\text{trt} * \text{gender} * \text{age}) - .036 MS(\text{Error})$

f. $1.003 MS(\text{trt} * \text{gender} * \text{age}) - .003 MS(\text{Error})$

g. $.960 MS(\text{trt} * \text{gender} * \text{age}) + .040 MS(\text{Error})$

h. $.898 MS(\text{trt} * \text{gender} * \text{age}) + .102 MS(\text{Error})$

First, the model is observed to be statistically significant F-statistic (4.72) with $p - value < 0.05$, thus suggesting that the model structure, as well as the contained factors and covariates jointly explain the variations in the post-test phobia scores. In other words, the model fits the data adequately. The covariate (pretest phobia scores) used in the model was also statistically significant F-statistic (47.95) with $p - value < 0.05$, suggesting its appropriateness as an adjustment. Consequently, the different effects (main effects, two-way and higher order interactions) are examined, while controlling for the pretest phobia scores.

Testing for Main Effects

Ho1: There is no significant main effect of Mindfulness Based Cognitive Therapy and Acceptance and Commitment Therapy on social phobia among secondary school adolescents.

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The test for treatment effects under the null hypothesis of no significant main effect of mindfulness-based cognitive therapy (MBCT), and acceptance and commitment therapy (ACT) on social phobia among secondary school adolescents is examined as one of the main effects in the study and as shown in Table 4.2, there was significant main effect of treatment on social phobia of adolescents ($F(2,157) = 62.97, p < 0.05, \eta^2 = 0.98$). This implies that there is a significant impact of the treatment on social phobia among secondary school adolescents. The posttest estimated mean scores for MBCT, ACT and CONTROL in Table 4.3 further show that the treatment effects differ relatively from each other.

Statistics of respondents by treatment

TREATMENT	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
MBCT	14.904	0.944	13.039	16.769
ACT	17.093	0.826	15.461	18.726
CONTROL	49.623	1.281	47.092	52.154

MBCT seemed to be more effective with the lowest mean score ($\bar{x} = 14.90$), followed by the ACT with a score $\bar{x} = 17.09$ while the Control group had the mean score ($\bar{x} = 49.62$). This outcome consequently led to the rejection of the null hypothesis at the stated significance level. In view of the above, K matrix was used to detect the specific treatment group that was responsible for the significant difference among the treatment groups, as shown in the table below:

Contrast Result (K Matrix)



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TREATMENT Difference Contrast		Dependent Variable
		POST TEST SCORE
	Contrast Estimate	2.189
	Hypothesized Value	0.000
	Difference (Estimate - Hypothesized)	2.189
	Standard Error	1.260
ACT vs. MBCT	Sig.	0.084
	95% Confidence Interval for Difference	Lower Bound -0.300
		Upper Bound 4.679
	Contrast Estimate	33.624
	Hypothesized Value	0.000
	Difference (Estimate - Hypothesized)	33.624
	Standard Error	1.447
CONTROL vs. ACT	Sig.	0.000
	95% Confidence Interval for Difference	Lower Bound 30.764
		Upper Bound 36.485

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The results presented in Table 4.4 are further probe of the observed significance of the main effect of treatment that was reported Table 4.2, in a post-hoc setting. This is achieved using the contrast of K matrix, which displays the contrast between compared sub-groups along with their corresponding standard errors, probability value indicating statistical significance or otherwise and the 95% confidence interval. The contrast estimates are tested against a hypothetical value, which in this case is zero, to see whether the contrast estimates are statistically different from zero. Statistically significant test result indicates that the sub-groups being compared differ markedly, one from the other, and their observed difference cannot be ignored. Although, the contrast estimate; which is the difference between the average phobia score of the ACT and MBCT treatment sub-groups; was observed to be 2.189, it was not statistically different from zero - hypothesized value, at the given 5% level of significance. Consequently, the social phobia scores of adolescents in the ACT treatment group are not statistically different from those of the MBCT treatment group. However, the contrast estimate of the ACT-Control group comparison, which is approximately 33.624, was observed to be statistically significant. This indicates that the ACT treatment group has an average phobia score that is approximately 33.624 less that of the control group. Trivially, MBCT treatment group's social phobia score, which have been shown to be statistically not different from the ACT treatment sub-group, are also statistically different and less than those of the Control group, with approximately 31.435. Clearly, it can be seen that there are two subsets with ACT and MBCT falling under one subset, while the Control group falls under the second subset. Evidently, the Control group is responsible for the statistically significant main effect of treatment. Summarily, while the main effect of mindfulness based cognitive therapy (MBCT) and acceptance and commitment therapy (ACT) on social phobia among secondary school adolescents are significant, the relative difference between both are not statistically significant.

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Ho2: There is no significant main effect of gender on social phobia among secondary school adolescents.

Here, the effect of gender on the social phobia among secondary school adolescents is tested under the null hypothesis of no significant main effect of gender on social phobia among secondary school adolescents. This categorization (male and female) and the relevant statistical summaries (estimated mean, standard error and 95% confidence interval) are presented in Table 4.5.

Summary Statistics of Respondents by Gender

GENDER	Mean	Standard Error	95% Confidence Interval	
			Lower Bound	Upper Bound
MALE	26.963	0.762	25.458	28.469
FEMALE	27.450	0.885	25.702	29.198

Source: Computed by author, 2018.

The ANCOVA result in table 4.2 reveals that there was no significant main effect of gender on social phobia ($F(1,159) = 0.57; p > 0.05, \eta^2 = 0.032$). The post-tests' estimated mean scores for both gender categories observed in Table 4.5 shows that male adolescents benefitted more ($\bar{x} = 26.96$) than their female peers ($\bar{x} = 27.45$). However, the observed differences between the gender categories are not statistically significant. This result denotes that gender does not really impact on social phobia among secondary school adolescents. Therefore, the null hypothesis of no significant main effect of gender on social phobia is hereby accepted.

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Ho3: There is no significant main effect of age on social phobia among secondary school adolescents.

The third hypothesis tests for another main effect (attributable to age) under the null hypothesis of no significant main effect of age on social phobia among secondary school adolescents. Two different age categories (10 – 13 and 14 – 17) were considered in the study. The summary statistics, comprising the estimated mean, standard error and 95% confidence interval for both age categories under the post-test stage are presented in Table 4.6.

Summary Statistics of Respondents by Age

AGE	Mean	Standard Error	95% Confidence Interval	
			Lower Bound	Upper Bound
10 – 13	27.612	1.041	25.554	29.670
14 – 17	26.802	0.553	25.709	27.894

Source: Computed by authors, 2018.

ANCOVA result in table 4.2 indicates that there was no significant main effect of age on social phobia among secondary school adolescents ($F(1,159) = 0.25; p > 0.05, \eta^2 = 0.16$). The estimated mean scores for the age groups shows that 14 -17 years showed more reduced social phobia ($\bar{x} = 26.80$) than their 10 – 13 years counterparts ($\bar{x} = 27.61$). However, the observed decrease in Table 4.6 is not statistically significant. Hence, the null hypothesis of no significant main effect of age on social phobia was accepted. This implies that there is no difference in the manifestations of social phobia between the two age group of adolescents (10 -13 and 14 -17) considered for this study.

Testing for two-way interaction effect

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Ho4: There is no significant interaction effect of treatment and gender on social phobia among secondary school adolescents.

The null hypothesis of no significant interaction effect of treatments and gender on social phobia among secondary school adolescents is tested here, in order to ascertain how the impact of both the treatment and gender on the social behaviour of secondary school adolescents. The ANCOVA results and relevant statistical summaries are presented in Table 4.2 and Table 4.7, respectively.

Summary Statistics of Respondents by Gender and Treatment

TREATMENT	GENDER	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
MBCT	MALE	16.028	1.549	12.968	19.088
	FEMALE	13.780	1.082	11.642	15.918
ACT	MALE	15.136	1.130	12.903	17.369
	FEMALE	19.051	1.154	16.771	21.331
CONTROL	MALE	49.726	1.301	47.154	52.297
	FEMALE	49.520	2.166	45.240	53.800

On the summary statistic results presented in Table 4.7, several interesting results are exhibited. Across the treatment groups, female tend to benefit more from MBCT ($\bar{x} = 13.78$) than their male colleagues ($\bar{x} = 16.03$). The case was reversed for ACT group where male had ($\bar{x} = 15.14$) compared to female adolescents ($\bar{x} = 19.05$). The exhibited pattern of the groupings differ statistically significantly, one from the other. Yet, the noticed different pattern was not statistically significant. This is confirmed by the ANCOVA result in Table 4.2, under the two-way effects section. The

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result shows that there was no significant interaction effect of treatment and gender on social phobia among (F (1,159) = 4.17; p > 0.05, $\eta^2 = 0.81$). The null hypothesis of no significant interaction effect of treatments and gender on social phobia among secondary school adolescents is therefore accepted at 5% level of significance.

The implication is that gender does not influence the effectiveness of treatments in the reduction of social phobia among secondary school adolescents in Oyo state.

Ho5: There is no significant interaction effect of treatment and age on social phobia among secondary school adolescents.

The two-way interaction effects of treatment and age, is tested under the null hypothesis of no significant interaction effect of treatments and age on social phobia among secondary school adolescents. The interest is to ascertain how the combination of both treatment and age impact on the social behaviour of secondary school adolescents. Consequently, various combinatorial pair of post-test stage is presented in Table 4.8, with relevant summary statistics that include estimated mean, standard error and 95% confidence interval for all plausible treatment-age combinations.

Summary Statistics of Respondents by Age and Treatment

TREATMENT	AGE	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
MBCT	10 – 13	14.958	1.674	11.649	18.267
	14 – 17	14.850	0.885	13.102	16.598
ACT	10 – 13	16.211	1.205	13.829	18.593
	14 – 17	17.976	1.123	15.757	20.195

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	10 – 13	51.667	2.368	46.988	56.346
CONTROL	14 – 17	47.579	0.941	45.720	49.438

Source: Computed by authors, 2018.

This table reveals a consistent pattern across age categories and treatment groups, as the estimated mean phobia scores observed in the post-test stage is smaller in comparison with the pretest scores. Adolescents in the MBCT group of age 14 – 17 were observed to have the least mean score ($\bar{x} = 14.85$) under the post-test stage, while for adolescents in the age group 10– 17 had ($\bar{x} = 14.96$). While adolescents in 10 – 13 years in the ACT group were observed to have the least mean phobia score ($\bar{x} = 16.21$) compared with ($\bar{x} = 17.98$) of age group 14 – 17 years. While these observed differences depicts some level of reduction in the mean phobia scores of secondary school adolescents from the pretest stage to the post-test stage, the statistical significance is not immediately clear. This is therefore examined using the analysis of covariance, which is presented in Table 4.2, under the section for two-way interaction effects. The result ($F(1,159) = 2.47$; $p > 0.05$, $\eta^2 = 0.69$) leads to a rejection of the null hypothesis at 5%. By implication, it can be conclusively stated that the interaction effect of treatments and age on social phobia among secondary school adolescents is not significant at 5% level of significance. This means that the null hypothesis is therefore accepted.

Ho6: There is no significant interaction effect of gender and age on social phobia among secondary school adolescents.

The two-way interaction effects of age and gender is tested here under the null hypothesis of no significant interaction effect of gender and age on social phobia among secondary school adolescents. This is to ascertain the impact of the combination of gender and age on the social behaviour of secondary school

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adolescents, with the ANCOVA results and relevant statistical summaries presented in Table 4.2 and Table 4.9, respectively.

Summary Statistics of Respondents by Gender and Age

GENDER	AGE	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
MALE	10 - 13	26.851	1.343	24.198	29.504
	14 - 17	27.075	0.720	25.653	28.498
FEMALE	10 - 13	28.373	1.589	25.233	31.513
	14 - 17	26.528	0.842	24.864	28.191

Source: Computed by author, 2018.

The ANCOVA result in Table 4.2 shows that the two-way interaction effects of gender and age do not significantly influence the social phobia score of secondary school adolescents ($F(1,159)=0.93$; $p > 0.05$, $\eta^2 = 0.26$). However, regardless of the reduction in the phobia scores of secondary school adolescents under contending treatment groups, the combinatorial sub-groups do not differ markedly, one from the other. The null hypothesis is therefore accepted at 5% level of significance.

The result indicates that there was no significant interaction effect of gender and age on social phobia among secondary school adolescents. This implies that both gender and age did not have effect on social phobia among secondary school adolescents in Oyo state.

Testing for three-way interaction effect



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Ho7: There is no significant interaction effect of treatment, gender and age on social phobia among secondary school adolescents

For this hypothesis, a three-way interaction effect comprising of all three main factors (treatment, gender and age) is tested using the analysis of covariance (ANCOVA), in Table 4.2, to ascertain their joint impact on the social phobia of secondary school adolescents.

Table 4.10: Summary Statistics of Respondents by Treatment, Gender and Age

TREATMENT	GENDER	AGE	Mean	Std. Error	95% Confidence Interval	
					Lower Bound	Upper Bound
MBCT	MALE	10 – 13	16.460	2.832	10.864	22.056
		14 – 17	15.596	1.268	13.090	18.102
	FEMALE	10 – 13	13.456	1.788	9.923	16.989
		14 – 17	14.104	1.219	11.695	16.512
ACT	MALE	10 – 13	13.920	1.710	10.541	17.298
		14 – 17	16.352	1.449	13.488	19.216
	FEMALE	10 – 13	18.502	1.707	15.128	21.876
		14 – 17	19.599	1.592	16.454	22.745
CONTROL	MALE	10 – 13	50.174	2.336	45.558	54.789
		14 – 17	49.278	1.064	47.175	51.380
	FEMALE	10 – 13	53.161	4.058	45.142	61.180
		14 – 17	45.880	1.573	42.771	48.988

The combinatorial mean scores of the different sub-groupings are presented in Table 4.10 with other relevant statistical summaries. One could observe that the estimated mean phobia scores in the post-test for treatment, gender and age among

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the various group categories are not significantly different from each other. In the same vein, table 4.2 confirms that there was no significant interaction effect of treatment, gender and age on social phobia among secondary school adolescents ($F(1,159) = 0.79$; $p > 0.05$, $\eta^2 = 0.11$). Therefore, the null hypothesis of no significant three-way interaction effect of treatment, age and gender on the social behaviour of secondary school adolescents is accepted. This feat is permissible given that higher interactions would be quite complex to handle, let alone explain.

Summarily, from the results presented in Table 4.2, one could clearly see that the only main effect that is significant is the treatment effect; all the hypotheses under the two-way interaction effect were not significant. In the same vein, the three-way interaction effect was not statistically significant. Consequent upon this stance, the actual sub-group responsible for this significant difference was examined using the contrast of marginal linear predictions, which showed that both MBCT and ACT differ markedly from the Control group irrespective of gender and age of secondary school adolescents.

Discussion

This finding is consistent with the results of past works on the effectiveness of mindfulness-based programmes for treating anxiety disorders and depression. An outstanding example is that of the work of Hofmann, Sawyer, Witt and Oh (2010), which submitted that mindfulness-based therapy was effective in treating anxiety and depression generally. Esmaeil, et al. (2016) also revealed that ACT is efficacious in treating anxiety disorders like social phobia and depression.

This present study also showed that both MBCT and ACT groups improved the outcomes from pre- to post-test much in the same way, resulting in the reduction of the severity of social phobia among secondary school adolescents. Although MBCT

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seems to be relatively, but not significantly, better than ACT, both ACT and MBCT are viable treatments for social phobia.

This finding is also in line with several other earlier studies (Caballo, et al., 2013; among others), which opined that findings about the relationship between gender and social phobia have so far been inconsistent and inconclusive.

There is no clear-cut decision on the influence of gender on social phobia among adolescents, thus the lack of significance in the main effect of gender on social phobia in this study is not strange.

This result also led the path of other studies on age being a determinant of social phobia and that the problem is common among adolescents in the range of 15 to 16 years particularly in Europe (Kessler et al., 2005).

The result of the fourth hypothesis demonstrates that there was no significant interaction effect of treatments and age on social phobia among secondary school adolescents. This result corroborates the findings of other scholars like Hancock, Swain, Hainsworth, Dixon and Koo (2016), as well as those of Ginsburg, Becker, Keeton, Sakololsky and Piacentini, (2008) and Hudson, Lester, Lewis, Tropeano and Creswell, (2013) that age was not significantly a determinant factor in using ACT for different clinical conditions.

Recommendations

Based on the findings of this study, the prevalence of social phobia is high among secondary school adolescents and requires prompt attention and intervention in order to avert various impending secondary complications that might be attached to it. There is hope that with the use of MBCT and ACT, the situation can be ameliorated and secondary school adolescents in our society can become self-confident and live better lives. In effect, it becomes imperative for psychologists, caregivers, counsellors,

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and psychotherapists to improve on the use of these cognitive-based interventions (MBCT and ACT), so as to reduce the prevalence of social phobia among secondary school adolescents. It is also conclusive from this study that treatment had significant effects on social phobia. Both gender and age did not have a significant effect on adolescents having social phobia after treatment with MBCT and ACT. Therefore, secondary school adolescents responded to treatment effectively irrespective of gender and age. Hence, any of the two therapies can be used only among secondary school adolescents in Oyo State, but also in Nigeria in general, and other nations of the world.

It is important to note that this study has contributed to knowledge in developmental and counselling psychology. It has broadened the knowledge of experts in psychology as well as educational psychology on the presence of social phobia among secondary school adolescents. It has also helped to develop psychological interventions and strategies towards treating this form of anxiety disorder. This can help in reducing the prevalence of social phobia among adolescents generally. In the same vein, it has expanded the frontiers of knowledge on the use of both MBCT and ACT in ameliorating social phobia among adolescents.

Based on the findings in this study, it was recommended MBCT and ACT should be integrated as part of important therapies for ameliorating anxiety problems like social phobia among adolescents in general. This would make them adopt strategies to overcome social phobia and other anxiety disorders that may want to hamper their utmost performance. Lastly, training should be organized for psychologists and counsellors and other caregivers in schools on the usage of both MBCT and ACT, which could be adopted for various anxiety disorders among adolescents.

Limitations



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Some of the limitations observed in the present study include the inability of the researcher to accommodate all the identified and screened adolescents with high level of social phobia in the treatment. Also, lack of equal sample in respect to gender and age as contained in the factorial matrix of research design could be responsible for the significant effect of the treatment on social phobia.

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