Effect of the Socio-Cognitive Technique on Tobacco Smoking Cessation among Undergraduates in Selected Public Universities in South-West Nigeria

Aaron Akinloye, Grace Legbeti and Mary Sam-Odutola

Abstract

This study investigated the effect of the socio-cognitive technique on tobacco smoking (TS) cessation (TSC) among undergraduates in selected universities in Nigeria. The study adopted pretest-posttest, control experimental research design with 2x2x3 factorial matrix. One hundred and twenty one participants were sampled for the study, using purposive and network sampling techniques. Participants were randomly assigned to the socio-cognitive technique and control group. TSCQ was used (r = 0.86). A socio-cognitive training package was used to complement the questionnaire. Data were analysed using ANCOVA. The results of the analysis showed that treatment had a significant effect on TS among smokers; there was no significant effect of gender on TS; a significant effect of smoking experience on TSC existed. Female smokers responded better to treatment than their male counterparts while the post hoc treatment mean score for beginners was greater than for intermediate smokers, followed by advanced smokers. The interaction effect of treatment and smoking experience was significant. The study concluded that TS is still prevalent among undergraduates despite all efforts made thus far. It is, therefore, recommended that agencies in TSC should employ the use of the socio-cognitive technique as adjunct and the strategy should be adopted in the university to

identify undergraduate smokers early and help them quit the habit since it is easier to stop when one is a beginner; laws should be promulgated on the ban of TS in public places; agencies involved in anti-tobacco smoking should intensify efforts towards TSC education in Nigeria and TSC education should be included as a topic in the general studies.

Keywords: *socio-cognitive technique, tobacco smoking cessation, undergraduate smokers*.

Authors:

Aaron Olalekan Akinloye Ph.D, is a lecturer in the Department of Human Kinetics and Health Education, University of Lagos, Nigeria.

Olufemi Adegbesan, Department of Human Kinetics and Health Education, University of Ibadan, Nigeria;

Mary Sam-Odutola, Department of Human Kinetics and Health Education, University of Lagos

1. Introduction

Tobacco smoking is a health problem inducing habit in which many young adults, most especially undergraduates, engage. Tobacco can be taken in several forms: it can be chewed; drunk as tea; sniffed or smoked in the form of cigarettes. Smoking is a contributory factor to peoples' ill health and their possible sudden death. It is the most commonly smoked substance (Stead & Lancaster, 2000). By nature, people can get involved in some actions regardless of circumstances which sometimes lead to unpleasant results.

Cigarette smoking is a significant risk factor for cardiovascular disease, cancer, respiratory function impairment and also one of the major causes of premature mortality in industrialised and developing nations (Doll, Edwards & Forbes, 2004). Tobacco is prepared with the nicotine-rich leaves of an American plant, which involves the process of drying and fermenting so as to promote smoking or chewing. Cessation of tobacco smoking increases the user's life span and reduces morbidity (United States Department of Health and Human Services, 1990). Many attempts to stop smoking are made unaided, with a success rate of around 2% to 4% (Hajek & Stead 2000; Hughes, 2007). Aided quitting attempts, particularly through a combination of behavioural counselling and nicotine replacement therapy (NRT), bupropion or varenicline, can improve success rates but these still remain low (Cahill, 2010; Hughes, 2007).

The World Health Organization (WHO) (2004) confirmed that, among persons who might ultimately achieve tobacco abstinence without therapy, the benefits can be profound if treatments help them to achieve tobacco abstinence earlier, because the risk of disease is strongly related to the duration of tobacco use. Tobacco smoking is assumed to be prevalent among adolescents and youths in the age range 4-14 years, 15-24 years, 30 years and above. Fawibe and Shittu (2011) affirmed that TS control is urgently needed to prevent the epidemic of tobacco-related diseases and deaths in developing countries, especially among undergraduates of the University of Ilorin. Umaru *et al.* (2014) examined the effect of a cognitive restructuring intervention on tobacco smoking among university students and found that the intervention given had a significant effect on TSC. Odey *et al.* (2012) noted that the prevalence of cigarette smoking was higher among young adults in Nigeria, especially male young adults.

They further observed that cigarette smoking was significantly associated with obesity and diabetes among smokers. Salawu *et al.* (2009) noted that 28% of university students in north-east Nigeria engaged in risk behaviours such as alcohol use, bullying, smoking and prostitution, among others. Tobacco use remains the leading cause of preventable morbidity and mortality worldwide and serves as precursor to various diseases such as cancer, cardiovascular and respiratory diseases that place a lot of challenges on the fragile health care systems of most people in developing countries (Moronkola & Akinterinwa, 2003). Consequently, the evidence which indicated the foregoing prompted the researcher to investigate whether this habit is applicable and extrapolates to other universities in Nigeria. Adelusi (2012) confirmed that tobacco consumption increased to 14.1% among university students in south-west Nigeria. It is conceptualised that federal universities are a focus of government policy, hence, the outcome of this study would be applicable to all other universities in Nigeria.

Bandura (1986) affirmed that behaviours are performed if people believe that they have control over the outcome, perceive few external barriers towards reaching their goals and have confidence in their ability to achieve them. Self-efficacy and outcome expectancies (related to the situation and to action) represent the two central concepts of social cognitive theory. The efficacy of social cognitive behavioural therapy for the treatment of tobacco dependence has been comprehensively reviewed and this is based on the reports from the US Surgeon General (United States Department of Health & Human Services, 2000) and the Royal College of Physicians; United Kingdom (Gligor-Serban, 2012). A variety of behavioural therapies have been shown to be efficacious for many smokers. Behavioural therapy ranges in complexity from simple advice offered by a physician or other

health-care provider to much more extensive therapy offered by counsellors or specialised smoking-cessation clinics. Clearly, as the level of complexity of the therapy increases, the cost to the smoker or third party provider increases and the availability of the therapy, particularly among developing countries, decreases.

Social cognitive theory (SCT) has been successfully applied to many health behaviours including quitting cocaine, weight control, adolescent delinquent behaviours, safer sex, condom use, sunscreen use and mammography screening (Prochaska, Hall & Humfleet, 2008). Studies employing SCT to predict TSC success have found that individuals in the contemplation and preparation stages are more likely to succeed in cessation than those in the pre-contemplative stage (Dijkstra & De Vries, 2000). Behavioural support, with multiple sessions of individual or group counselling, assists smoking cessation. Both individual and group therapy have been shown to improve quit rates beyond those seen with self-help materials alone (Lancaster *et al.*, 2000). There appears to be no difference between individual and group therapy in terms of TS quit rates; therefore, either therapy may be of benefit (*ibid.*, 2000). Groups are theoretically more cost effective but their usefulness may be limited by difficulties in recruiting and retaining participants (Stead & Lancaster, 2000).

A general trend has been uncovered whereby experiential processes are used more extensively earlier in the stage progression, whereas, socio-cognitive behavioural processes tend to peak later in the stage continuum, around the time of action and maintenance (Lancaster *et al.*, 2000). Consistent relationships between the movement through the stages and the decisional balance have also been found, in that early in the process, the pros of smoking tend to outweigh the cons but, at about the contemplation stage, a cross over

occurs whereby the cons begin to outweigh the pros (Frangos-Christos & Frangos-Constantinos, 2010). However, one study by Bandura (1986) found that the processes of change and the pros and cons of smoking failed to predict progressive stage movements at one and two year follow-ups in a work site cessation programme (Herzog *et al.*, 1999). Studies employing the SCT (Bandura, 1986) have identified factors that are related to successful initial quitting. These predictors of successful quitting were less nicotine dependence, social and environmental factors, self-esteem, social supports, increased physical activity and self-efficacy in quitting (Fiore, 2000; Hajek & Stead, 2000).

South West is one of the six geo-political zones in Nigeria and it consists of Ekiti, Ondo, Lagos, Ogun, Osun and Oyo States. There have been several quit attempts on TS among university students generally, particularly in Nigeria but there is a dearth of such studies on smoking cessation using socio-cognitive therapy among undergraduates in South Western Nigeria. Meta-analytical studies indicate that several therapies have been applied to quitting smoking but the success rate is low, hence, this study investigated the effect of the socio-cognitive technique on quitting smoking among undergraduates in first generation universities in Nigeria.

2. Methods and Materials

The research design that was used in this study is the pretest, posttest, control experimental design using a 2x2x3 factorial matrix. The study adopted the design because the participants for the study were randomly assigned to the treatment group or the control group. The factorial matrix that was used in this study is based on the fact that the study involves the use of an independent variable - socio-cognitive technique with control at two levels - moderating variables of gender that is, male

and female at two levels and smoking experience, that is, beginner, intermediate and advanced at three levels. One hundred and twenty one undergraduate smokers were sampled as participants using network and purposive sampling techniques. The instrument used was a self-developed questionnaire which was factor loaded using exploratory factor analysis setting the retention criterion at 0.06.

2.1. Inclusion Criteria

The criteria included in this study are:

- Full time undergraduates from Universities of Ibadan, Ibadan, Oyo State and Obafemi Awolowo University, Ile-Ife, Osun State;
- Smokers who were undergraduates;
- Those screened and confirmed to be smokers;
- Male and female undergraduate smokers who showed genuine interest by filling in the informed consent form and questionnaire;
- Those who were available and accessible throughout the intervention and complied with the conditions of the study.

3. Results

There is no significant main effect of treatment on TSC among undergraduates in the selected universities.

Source	**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**	**Eta^2/ Effect Size**
Corrected Model	29170.321	2	9723.440	241.824	0.000	0.861

Pretest Tobacco	0.265	1	0.265	0.007	0.935	0.000
Treatment	28450.781	1	14225.390	353.789	0.000	0.858
Error	4704.422	118	40.209			
Total	33874.744	120				

Table 1: *Effects of Treatment on Tobacco Smoking Cessation among Undergraduates;* **source:** *Original Research* (R-squared = 0.861, Adjusted R-Squared = 0.858)

The results in Table 1 above showed that there was a significant effect of the treatment group on TSC among undergraduates ($F(2,118) = 353.789$, $P < 0.05$, $\eta^2 = 0.858$). This denotes a significant difference in the groups on TSC among undergraduates. Hence, the null hypothesis is rejected; the table also shows the contributing large effect size of 85.8%. This value indicates how much of the variance in the dependent variable is explained by the independent variables.

This implies that the treatments given had impact on undergraduate smokers. This implies that there would be a substantial improvement towards cessation of TS with different population groups, particularly university students in Nigeria using these treatments.

There is no significant main effect of smoking experience on TSC among undergraduates.

Source	**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**	**Eta^2/ Effect Size**
Corrected Model	4152.527	3	1384.17	5.44	0.00	0.123

			6	9	2	
Pretest Tobacco	237.187	1	237.187	0.934	0.336	0.008
Treatment	3432.986	2	1716.493	6.757	0.002	0.104
Error	29722.217	117	254.036			
Total	33874.744	120				

Table 2: *Effects of Smoking Experience on Tobacco Smoking Cessation among Undergraduates;* **source:** *Original Research* (R-squared = 0.123, Adjusted R-Squared = 0.100)

The results in Table 2 showed that there was a significant effect on smoking experience on TSC among undergraduates (F(3,117) = 6.757, P <0.05, η^2 = 0.104). This denotes a significant difference in the groups with respect to TSC. Hence, the hypothesis is rejected. The table also showed a contributing effect size of 10.4%. This indicates that smoking experience has influence on tobacco smoking cessation among undergraduate smokers.

Smoking Experience	Mean	Std. Error
Beginner	61.125	2.218
Intermediate	59.472	2.522
Advanced	47.815	2.999

Table 3: *Estimated Marginal Means of Smoking Experience on TSC;* **source:** *Original Research*

Table 3 showed participants who were beginner smokers ($\tilde{x}$ = 61.125) had the highest mean score, followed by the intermediate smokers and lastly by the advanced smokers ($\tilde{x}$= 47.815). The mean score of ($\tilde{x}$ = 61.125) for beginners is

greater than ($\tilde{x}$ = 59.472) for intermediate smokers and ($\tilde{x}$ = 47.815) for the advanced smokers respectively. It could, therefore, be concluded that undergraduate beginner smokers had better chances of quitting than those who are in between the intermediate and advanced smokers, while those at the intermediate have better chances of quitting that those at the advanced stage.

There is no significant interaction effect of treatment and smoking experience on TSC among undergraduates.

Source	**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**	**Eta^2/ Effect Size**
Corrected Model	29679.055	6	3297.673	87.242	0.000	0.876
Pretest Tobacco	6.711	1	6.711	0.178	0.674	0.002
Main Effect						
Treatment	23721.544	1	11860.772	313.785	0.000	0.850
Smoking Experience	120.583	2	60.292	1.595	0.208	0.028
2-Way Interactions						
Treatment x Smoking Experience	345.679	2	86.420	2.286	0.045	0.176
Error	4195.689	114	37.799			
Total	33874.744	120				

Table 4: *Interaction Effects of Treatment and Smoking Experience on TSC among Undergraduates;* **source:** *Original Research* (R-squared = 0.876, Adjusted R-Squared = 0.866)

Main effect: there was a significant difference in the treatment groups and in smoking experience. There was also a significant interaction effect of treatment and smoking experience ($F(6,114) = 2.286$, $P < 0.05$, $\eta^2 = 0.176$).

This indicates that there was a significant difference in TSC among undergraduates based on the interaction between treatment and smoking experience. Hence, the null hypothesis is rejected. The table also showed a contributing effect size of 17.6, which means that 17.6% of the variance in cessation of TS is accounted for by the interaction of treatment and smoking experience. The interaction effect of treatment and smoking experience had significant influence on cessation of tobacco smoking among undergraduate smokers.

4. Discussion of Findings

A variety of behavioural therapies has been shown to be efficacious for many smokers. Behavioural therapy ranges in complexity from simple advice offered by a physician, information, health educators or other health-care providers to much more extensive therapy offered by counsellors or specialised smoking-cessation clinics. This result corroborates the view of Prochaska, Hall and Humfleet (2008) that social cognitive theory (SCT) has been successfully applied to many health behaviours including quitting cocaine, weight control, adolescent delinquent behaviours, safer sex, condom use, sunscreen use and mammography screening.

Gender differences in smoking quitting rates are frequently reported and are the subject of much speculation but this study found no significant effect of gender on smoking cessation. This result is contrary to the view of Ellis *et al*. (2008) that women were more responsive to tobacco control programmes but men required a more intensive strategy. Potential mediating mechanisms include reductions in weight gain, withdrawal symptoms and cigarette cravings, in particular. The latter two factors are known contributors to cessation resistance and smoking relapse. On the smoking experience, the general consensus has been that the kind of experience one has affects the likelihood that this person will remain with smoking as a habit. Upon review of the literature, it was found out that researchers who reached this conclusion typically categorised the smoking experience variable as follows: beginners, middle smokers and high smokers and heavy smokers (Taylor & Katomeri, 2007). When smoking experiences are defined in this manner, smoking prevalence sometimes differs little between those who are low level smokers and those of higher levels and sometimes the prevalence of smoking cessation is higher (Patrick, 2009). Bjornson *et al*. (1995) also concluded that the interaction of gender with smoking experience as far as quitting smoking is concerned was not significant. Marcus *et al.,* (1998) found that women had significantly higher quit rates in a cessation intervention, compared with programmes with no fitness component.

Dijkstra and De Vries (2000) also supported the findings of this study when they stated that studies employing the SCT to predict tobacco smoking cessation success have found that individuals in the contemplation and preparation stages are more likely to succeed in cessation than those in the pre-contemplative stage. Lancaster *et al.* (2000) stated that a general trend has been uncovered whereby experiential

processes are used more extensively earlier in the stage progression, whereas socio-cognitive behavioural processes tend to peak later in the stage continuum, around the time of action and maintenance. Frangos-Christos and Frangos-Constantinos (2010) also in line with the findings stated that consistent relationships between the movement through the stages and the decisional balance have also been found in that, early in the process, the pros of smoking tend to outweigh the cons but, at about the contemplation stage, a cross over occurs whereby the cons begin to outweigh the pros. However, Herzog *et al*. (1999) in contrast to this finding found that the processes of change and the pros and cons of smoking failed to predict progressive stage movements at one and two year follow-ups in a work site cessation programme.

Lancaster *et al.* (2000) in support of the findings of this study stated that both individual and group therapies have been shown to improve quitting rates beyond those seen with self-help materials alone. There appears to be no difference between individual and group therapy in terms of TS quitting rates; therefore, either therapy may be of benefit (*ibid.*, 2000). Groups are theoretically more cost effective but their usefulness may be limited by difficulties in recruiting and retaining participants (Stead & Lancaster, 2000). Fiore (2000) and Hajek and Stead (2000) that the predictors of successful quitting were less nicotine dependence, social and environmental factors, self-esteem, social support, increased physical activity and self-efficacy.

5. Conclusion and Recommendations

The outcome of this study suggests that health care providers should promote the application of socio-cognitive therapy, most especially among the young adults who believe that life is characterized by freedom and is a mere adventure. Also, the

results of this study indicated that, though several attempts to stop cigarette smoking have yielded little success rate, with the conceptualization and application of this treatment, the confidence level of student smokers in the institutions of higher learning in the world, particularly at the universities in Nigeria would be boosted. Subsequently, the following recommendations were made: agencies that are involved with TS cessation should also employ the use of socio-cognitive strategy (goal setting, self-efficacy and behaviour change each time the urge comes) as an adjunct in smoking cessation programmes, counselling units should be established within the university to identify undergraduate smokers early and help them quit the habit since it is easier to stop when one is a beginner. Also, laws should be promulgated on the ban of cigarette smoking in public places, while agencies involved in Anti-tobacco smoking should intensify efforts towards TS cessation in Nigeria.

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