

**EFFECT OF EVALUATIVE CONDITIONING ON ATTITUDES OF
SMOKERS TOWARDS SMOKING BEHAVIOUR: THE MODERATING
ROLE OF SELF-EFFICACY**

BY

**EZEUZO OLIVERMICHAEL DUNALUO
PG/MSC/14/68348**

**DEPARTMENT OF PSYCHOLOGY
FACULTY OF THE SOCIAL SCIENCES
UNIVERSITY OF NIGERIA, NSUKKA**

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TITLE PAGE

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TOWARDS SMOKING BEHAVIOUR: THE MODERATING ROLE OF SELF-
EFFICACY**

**AN M. Sc. THESIS SUBMITTED IN PARTIAL FULFILLMENT OF THE
REQUIREMENTS FOR THE AWARD OF MASTER OF SCIENCE (M.Sc.) HONORS IN
EXPERIMENTAL PSYCHOLOGY**

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EZEUZO OLIVERMICHAEL DUNALUO

PG/MSC/14/68348

DEPARTMENT OF PSYCHOLOGY

FACULTY OF THE SOCIAL SCIENCES

UNIVERSITY OF NIGERIA, NSUKKA

SUPERVISOR: DR. LAWRENCE AMAZUE

DECEMBER, 2016

CERTIFICATION

I, Ezeuzo Olivermichael Dunalo, a postgraduate student of the Department of Psychology, University of Nigeria, Nsukka, with registration number PG/M.Sc./14/68348 has satisfactorily completed the requirements for course and research work for the award of Masters of Science (M.Sc.) degree in Experimental Psychology. This thesis is original and has not been submitted for any other diploma or degree in this or any other institution.

Dr. Lawrence Amazue
(Supervisor)

Dr. Chris. N. Uzundu
(Head, Psychology Department)

Rev. Fr. Pro. Hillary, C. Achunike
(Dean Faculty of the Social Science)

Dr. O. O. Ojiji
(External Examiner)

DEDICATION

This work is entirely dedicated to the God Almighty for the gift of life, sustenance, and good health throughout the study period.

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Abstract

This study examined the effect of Evaluative conditioning on attitudes of smokers towards smoking behaviour: With self-efficacy as a moderating variable. Evaluative conditioning was varied into evaluative condition group and control group. Fifty male volunteered undergraduate student of University of Nigeria, Nsukka who were smokers participated in the study. Their age range was between 18 and 30years with mean age of 23.7000. Self-efficacy scale, five dimensions of attitude scales, a Projector, Benson and Hedges, Dorchester cigarette, lighters and five cigarette aversive images were used as materials. Prior to evaluative conditioning manipulation, t-test was used to compare baseline scores on the different attitudes towards smoking between the evaluative condition group and the control group and a non significant difference in attitudes for both conditions was obtained. Multivariate analysis of covariance was used to ascertain whether evaluative condition will affect post scores of different dimensions of attitude using baseline scores as covariates. Result indicates a significant effect of evaluative condition on Attitude towards smoking behaviour: [$F(1,43) = 25.3, p < .001$], Attitude towards behaviour change: [$F(1,43) = 72.8, p < .001$], Self-identity towards behaviour change: [$F(1,43) = 66.70, p < .001$], Perceived control over behaviour: [$F(1,43) = 43.7, p < .001$] and Intention towards behaviour change: [$F(1,43) = 125.2, p < .001$]. Moderated logistic regression was further used to test whether evaluative conditioning predicts smoking behaviour and whether self-efficacy moderates the relationship between evaluative conditioning and smoking behaviour. Results indicated that participants in evaluative condition group significantly chose not to smoke more than those in the control condition, χ^2 Log Likelihood = 46.39, Goodness of Fit = 4.05 (df = 7, $p = .774$), χ^2 (3, N = 50) = 22.84, $p < .001$ and self-efficacy significantly moderated the relationship between evaluative conditioning and smoking behaviour, (Wald statistics = 3.87, df = 1, $p < .05$). Lastly, implications, limitations and suggestions were made for further studies.

CHAPTER ONE

Introduction

Any behaviour that affects human health directly or indirectly attracts the attention of people, government, and even the society at large. Among these behaviours is cigarette smoking behaviour. Smoking behaviour is a practice of taking tobacco substance which is absorbed into the blood stream and harm virtually all parts of the body. This substance is in form of dried leaves of the tobacco plant which have been rolled into a small square of rice paper to create a small round cylinder called a cigarette. Medical dictionary defined smoking as the inhalation of the smoke of burning tobacco encased in cigarettes, pipes, and cigars. Historically, smoking has been as old as 5000 BC when it was practiced in ancient civilization cities such as the Babylonians, Indians and Chinese, where it was burnt as incense during Shamans rituals and was later adopted for pleasure (Robicsek, 1978). In shamanistic rituals, smoking of tobacco or other various hallucinogenic drugs were used to trances and to come into contact with the spirit world. This burning of incense is still in practice in Catholic and Orthodox Christian churches.

However, there are serious changes in smoking behaviour prevalence since the mid-1990s. For instance, smokers worldwide have increased from 721 million in 1980 to 967 in 2012 and the number of cigarettes consumed have also increased from 4.96 trillion to 6.25 trillion (Marie, 2014). Moreover, the prevalence of cigarette smoking among Nigerians is unstable. For instance, Odey, Okokon, Ogbeche, Godwin, and Emmanuel (2012) reported a prevalence rate of 6.4% among adolescents in Calabar, Southeastern Nigeria and 5.7% in Ilorin, North Central Nigeria. Smoking prevalence rates ranging 4.7% in Ibadan (Southwest Nigeria) to 16.7% in Kano (Northeast Nigeria) among respondents aged between 13 to 15 years was reported (Ekanem, 2008). Salawu, Damburam, Desalu, Olokoba, Agbo, and Midala (2009) reported a

prevalence rate of 33.9% in Northeast Nigeria, and Obot (1990) reported a prevalence rate of 22.6% in a sample of 1,271 Nigerians. In 2012, smoking prevalence among men was higher than for women in all countries except Sweden, but prevalence for women was above 25% in Austria, Chile, and France and higher than 30% in Greece, among the highest percentages in the world (Global smoking prevalence, 2012). Smoking prevalence among males and females in Nigeria was 10% between 2012 and 2014, and this percentage is compared to be lower in other West African countries like Burkina Faso at 22% (Gats, 2012).

On perception of smokers in Nigeria, a recent survey conducted by the United State for Disease Control (2001), Cross River in Nigeria found that 28% of young people surveyed think that girls who smoke have more friends; while 45% of them have it that the boys who smoke have more friends. Also, 17% think that boys who smoke and 16% think that girls who smoke look more attractive. In the same vein, Odigwe (2003) observed that in Nigeria, cigarette smoking is seen by young people as something exciting and desirable.

Despite the warnings printed on each pack of cigarette, many people still smoke. A 2007 report by Robert and Shiffman have it that each year, 4.9 million people worldwide die as a result of smoking. About 435000 deaths annually in the United State are related to smoking (Mokdad, Marks, Stoup, & Gerberding, 2004). Cigarette smoking behaviour harms every organ of the body; reduces the health of smokers; and can cause cancer almost anywhere in the body like in: bladder, cervix, colon, and rectum, esophagus, kidney and ureter, larynx, liver, oropharynx, pancrease, stomach, trachea, bronchus and even lungs (U.S. Department of health and human services, 2014, 2010). More women die from lung cancer each year than from breast cancer (U.S. Department of health and human services, 2014). About 80% of all deaths from chronic obstructive pulmonary disease (COPD) are caused by smoking and smokers are more

likely than non-smokers to develop heart disease, stroke, and blood vessels-cardiovascular disease (U.S. Department of health and human services, 2014, 2010). Smoking behaviour affects the health of teeth and gums and can cause tooth loss; increases the risk for cataracts and a type of diabetes-mellitus, making it harder to control and decreases immune function (U.S. Department of health and human services, 2014). It hampers woman conception, affects her baby's health before and after birth and also increases risk for early delivery stillbirth, orofacial clefts in infants, low birth weight, sudden infant death syndrome, ectopic pregnancy, and low birth weight (U.S. Department of health and human services, 2001, 2010, 2014). It affects men's sperm, which can reduce fertility and also increase risk for birth defects and miscarriage (U.S. Department of health and human services, 2014). On the other hand, the negative implication on secondhand smokers may be more powerful than many nonsmokers. Thus, spending just one hour in a smoky environment is the equivalent of actually smoking four sticks cigarette (Roizen, 2004).

Several agencies and government have put some outstanding measures towards curbing smoking behaviour among Nigerians. Thus, the national tobacco control bill was presented in 2009 at Abuja National Assembly. This bill regulates all forms of cigarette manufacturing, advertizing, distribution, consumption of tobacco products and smoking in public places in Nigeria such as restaurants, public transports, schools, hospitals and other social gatherings. This bill also prohibits the sale of cigarette to persons under 18. Also, smoking in public places is punishable by a fine of not less than N200 and not exceeding N1000 or to imprisonment to a term of not less than one month and not exceeding two years or both a fine and imprisonment (Smoking in Nigeria, 2008). The anti-tobacco communities are at the forefront of ensuring smoke-free public places.

Moreover, smoking behaviour is an attitude. People acquire smoking behaviour the same way they learn other attitudes. Thus, according to Allport (1935), attitude is an expression of favour or disfavour toward a person, place, thing, or event. It is disposition of behaviour in a certain way. The vital issue behind attitude concept is the notion that attitudes in some way guide, influence, direct, shape, or predict actual behaviour (Ajzen & Fishbein, 1974; Kraus, 1995). Theories of classical conditioning, instrumental conditioning and social learning contributed a lot in the process of attitude formation. According to Fazio and Olson (2003), attitudes are formed through three components: affect, cognition and behaviour.

Cognitive component: The cognitive components of attitudes refer to the beliefs, thoughts, and attributes that we would associate with an object. People's mental processes towards smoking determine whether they are going to smoke.

Affective component: The affective components of attitudes refer to person's feelings or emotions linked to an attitude object. This implies that the way one feels towards the smokers and even smoking will help the person to develop an attitude towards smoking.

Behavioural component: The behavioural components of attitudes refer to past behaviours or experiences regarding an attitude object. Smoking behaviour can also be initiated as a result of past experience.

Smoking is a behaviour we acquired just like other attitudes. This implies that we learn the Attitude Towards Smoking Behaviour (ATSB) the same way we learn other behaviours. Social learning theory of Bandura (1977) has it that we learn by simply imitating a model. Many smokers acquired their attitude either from peers or guardian. Proximity of cigarettes and having a sibling who smokes are vital factors that increase the probability of children developing into regular smoking behaviour (Snell, 2005). Attitude influences unhealthy behaviours, like smoking

(Ajzen, 2001). Studies using self-report measures revealed that smokers' general attitude toward smoking is negative rather than positive (Chassin, Presson, Sherman, & Edwards, 1991; Swanson, Rudman & Greenwald, 2001). This suggests that factors other than general attitudes are also behind smoking behaviour. It could be that smokers are in fact characterized by a positive attitude toward smoking, but are unwilling to reveal this. Swanson, Rudman, and Greenwald (2001) also found implicit attitude of smokers toward smoking to be more positive than to nonsmokers. Attitude toward smoking differs with socio-demographic characteristics as smokers are more tolerant than nonsmokers (Ross & Perez, 1998). Environment also influences people's attitude towards any behaviour (Dols, Van den Hout, Kindt, & Willems, 2002). As such, it has been shown that participants who were deprived of nicotine and exposed to smoking cue generated more positive characteristics of smoking than smokers (Sayette & Hufford, 1997).

Attitude Towards Behaviour Change (ATBC) deals with the relationship between attitude and behaviour change. Attitude change is a necessary instrument for behaviour change (Bettinghaus, 1986; Ajzen & Fishbein, 1980). Perhaps, it is possible that behaviour change like stopping or starting smoking has an influence on attitude (McBroom & Reed, 1992). Attitude-behaviour relationship researches have been carried out within the framework of the theory of reasoned action (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975). In their findings, Krosnick, Judd, and Wittenbrink (2005) posited that the pivot issue that occupies a central position in the study of behaviour change is the concept of attitude. Petty, Wegener, and Fabrigar (1997) reported that a numerous material was produced concerning attitude structure, attitude change, and the consequences of holding attitude. According to this researcher however, positive attitudes exposes us to happiness and joy than negative attitudes. Since our attitudes are the driving forces in our lives, it can be either push us up or pull us down. Thus, moving from

positive attitude to negative one like smoking will pull us down and expose us to dangerous health conditions like cancer and cardiovascular diseases.

Self-identity Towards Behaviour Change (STBC) has been shown to be an important factor in changing behaviour, like smoking. Self-identity is the interpretation of a person about self. People think of themselves in terms of social roles, example, parent, employee, and self - identity reflects the values and behaviours that are associated with these roles which are more self-defining than others (Stets, 2006). Thus, the more central a certain role is to someone's self-identity, the more likely that the behaviours associated with this role will be performed. Similarly, Hogg (2006) social identity theory describes self-identity in terms of the social groups that someone belongs to. Charng, Piliavin, and Callero (1988) posit that the more often people perform a certain behaviour, the more this behaviour becomes part of their self-identity. Few studies have found direct effects of self-identity on behaviour change (Hamilton & White, 2008; Jackson, Smith, & Conner, 2003). In contrary to this, most researchers have not found direct effects on behaviour (Charng, Piliavi, & Callero, 1988; Smith, Terry, Manstead, Louis, Kotterman, & Wolfs, 2007).

Changing smoking behaviour also depends on one's Perceived Control Over Behaviour (PCOB). PCOB denotes an individual's perceived ease or difficulty in performing a particular behaviour (Ajzen, 1991). Perceived behavioural control is determined by the total set of accessible control belief about the presence of factors that may facilitate or hamper performance of the behaviour (Ajzen, 2001). Perceived behavioural control is conceptually related to self-efficacy. Perhaps, the component of perceived behavioural control in the theory of planned behaviour reflects a person's self-confidence in the ability to conduct the behaviour (Ajzen, 1991). If a person has enough knowledge, she or he will have higher confidence in the ability to

carry on the consumption behaviour and his or her attitude toward the act already shows this confidence which implies that the person has volitional control over his or her behaviour. To back it up, Fishbein and Ajzen (1975) opined that the behaviour under consideration must be under volitional control. This connotes that behaviour may be said to be completely under a person's control if the person can decide at will to perform it or not. However, the extent to which a smoker believes he can control his smoking behaviour is known as perceived control over smoking behaviour.

Intention Towards Behaviour Change (ITBC) is also important to changing behaviour especially smoking behaviour. It is an indication of an individual's readiness to perform a given behaviour which is an antecedent of such behaviour (Ajzen, 2002). Behaviour is an individual's response in a given situation. According to Ajzen and Fishbein (1980), intention to perform a particular behaviour is the highest determinant of that behaviour and intention in turn, depends on both an individual's attitude toward the behaviour. In the case of smoking however, people will have strong intentions to smoke if they view smoking favourably and believe that others who are important to them think that they should smoke. As such, attitude depends upon the intention, population and the individual in question (Sutton, 1989). Ajzen (1985) gave credit to the fact that the formation of intentions to act may also be influenced by aspects that are not under a person's volitional control. Considering that intention to perform a particular behaviour is the single best determinant of that behaviour, anybody that engages his self into smoking must have conceived the intention to do so. Nevertheless, because attitudes can influence behaviour (Ajzen, 1991), attitude change may encourage healthy choices of behaviour through vital mechanisms like evaluative conditioning.

Evaluative Conditioning (EC) is a process of attitude formation of like or dislike by pairing condition stimulus with unconditioned stimulus (De Houwer, 2007). This denotes that EC is obtained when a stimulus (conditioned stimulus-CS) acquires the valence of a valenced stimulus (unconditioned stimulus-US) after being paired with it. Thus, evaluative conditioning involves transfer of the valence associated with the unconditioned stimulus (US) to the conditioned stimulus (CS). It is likely achieved through a single pairing order than several pairing in classical condition. EC is of interest to practitioners concerned with modifying attitudes in the social (Walther, Nagengast & Trasselli, 2005), political (Razran, 1954), consumer (Stuart, Shimp, & Engle, 1987), and clinical domains (Eifert, Crail, Carey, & OöConnor, 1988). Theoretically, EC is often regarded as an automatic affective learning process (Walther, 2002).

Furthermore, basic procedures for demonstrating Evaluative conditioning are:

- i. The neutral stimulus (CS) is paired with an affective stimulus (US). This means presenting the CS first and then the US, with the CS continuing to be present until the US occurs. The interval between the CS and US is called CS-US interval. CS-US interval works best on the order of 5 to 10 seconds.
- ii. Changes in the valence of the neutral stimulus are measured. This could be done using some statistical tools.

However, Evaluative conditioning is similar, but not identical to classical or Pavlovian conditioning. It is worthy to note that what distinguishes EC procedure from classical conditioning procedures is that changes of evaluative reaction are examined (Olson & Fazio, 2001). In classical conditioning of Pavlov, the sound of a bell (conditioned stimulus) might often precede the presentation of food (unconditioned stimulus) that elicits salivation (conditioned

response). Presenting the bell alone after sometime will elicit the same response. But in EC, the evaluation of attitudes towards the sound of a bell will likely remain unchanged.

Evaluative conditioning has two major characteristics.

Firstly, there is contingency awareness between conditioned stimulus and unconditioned stimulus pairing. This is the extent to which individuals are aware of the conditioned stimulus and unconditioned stimulus pairing and whether such awareness is necessary for EC to occur (De Houwer, Thomas & Baeyens, 2001; Field, 2002). Supporting this issue, researchers posited that EC does not occur without awareness (Pleyers, Corneille, Luminent, & Yzerbyt, 2007; Pleyers, Corneille, Yzerbyt, & Luminent, 2009). In contrary, some researchers also posit that EC is obtained without participants' awareness of the CS-US contingencies (Baeyens, Eelen, & Van den Bergh, 1990; Olson & Fazio, 2002), and also that contingency awareness is unrelated to the extent to which EC is observed (Baeyens, Eelen, & Van den Bergh, 1990; Baeyens, Hermans, & Eelen, 1993).

Secondly, EC can be resistant to extinction compared with Pavlovian Conditioning (PC). In PC, CS extinguishes if the CS repeatedly presents without the US which decreases the signal value of the CS. But in EC, CS does not depend on signal value instead, on positive or negative values previously associated with US. This is the reason why EC has a serious resistance to extinction.

In several studies, Evaluative conditioning has been associated with the development of food likes and dislikes. Humans develop a dislike for foods that are followed by negative consequences such as nausea, rashes, diarrhea, and breathing problems (Pelchat & Rozin, 1982). Also, taste aversions are derived from various situations, such as food poisoning, allergic reaction, over consumption and some medical treatments using EC (Batsell & Brown, 1998).

Change in food likes has been shown with flavour-flavour pairings in EC. That is by pairing of a neutral flavour (condition stimulus) with a liked or disliked flavour (unconditioned stimulus) that can result in a change in liking of the CS flavour. Flavour-flavour conditioning appears to be an effective tool for increasing liking for isolated tastes and specific foods (Eertmans, Baeyens, & Van den Bergh, 2001).

Nevertheless, the same way evaluative conditioning influences attitude, some other mechanisms like people's self-efficacy will also have impact on it. Thus, self-efficacy is the belief in one's ability to complete a given task (Ormrod, 2006). As an example, one's self-efficacy will determine whether he or she will smoke in the next two hours. Ormrod posits that high or low self-efficacy determines whether or not someone will choose to take on a challenging task. Self-efficacy affects every area of human endeavour. Bandura (1977) identifies four factors affecting self-efficacy which include: Experience, modeling, social persuasion and physiological factors like stressful situations. Self-efficacy has significant effect on human behaviour. For instance, people generally avoid tasks when their self-efficacy is low, but undertake tasks where self-efficacy is high. Self-efficacy has several effects on thought patterns and responses. Low self-efficacy can lead people to think of a task to be harder than they actually are (Bandura, 1977). It also motivates human behaviour in both positive and negative ways. Thus, the higher the person's self-efficacy, the more active his efforts become. But those with low self-efficacy sometimes experience incentive to learn more about an unfamiliar subject. When self-efficacy exceeds one's ability, extra ability is required to complete tasks. But when self-efficacy is lower than one's ability, it hampers skill development (Bandura, 1977). Research shows that when the optimum level of self-efficacy is slightly above ability, people are encouraged to tackle challenging tasks and gain experience (Csikszentmihalyi, 1997). Health

related choices, such as smoking, visiting of hospital, physical exercise, dieting, condom use, dental hygiene, seat belt uses, and breast self-examination are dependent on self-efficacy (Conner & Norman, 2005). This implies that our self-efficacy beliefs are cognitions that determine whether health behaviour change will be initiated.

Self-efficacy predicts behavioural intentions and can help prevent relapse to unhealthy behaviours (Schwarzer, 2008). In line with this, it will likely moderate the relationship between EC and smoking behaviour, which is an unhealthy behaviour.

Statement of the Problem

Smoking remains a significant public health problem, and without mapping out adequate preventive measures, death will continue to increase (Lenhard, 1996). Smoking has therefore been studied more extensively than any other form of consumption. It is generally five times higher among men than women (Guindon & Boisclair, 2003). Nonetheless, smoking has some outstanding consequences to both the active and non-active smokers. Thus, cigarette smoking harms nearly every organ of the body, causes many diseases, and reduces the health of smokers in general. Smoking is the leading preventable cause of death globally (U.S. Department of health and human services, 2010, 2014). It causes several illnesses ranging from; stroke, cancer, orofacial cleft, chronic obstructive pulmonary diseases, cardiovascular diseases, stillbirth, and even lower sperm count in men among others. Considering these ugly menaces of smoking behaviour, the problems this study specifically intended to address include:

- i. Would EC affect attitude towards smoking behaviour after controlling for baseline scores, with those in the EC group having a more negative attitude toward smoking than the control condition?

- ii. Would EC affect attitude towards behaviour change after controlling for baseline scores, with those in the EC group having a more positive attitude toward behaviour change than the control?
- iii. Would EC affect self-identity towards behaviour change after controlling for baseline scores, with those in the EC group having a more positive self-identity towards behaviour change than the control?
- iv. Would EC affect perceived control over behaviour after controlling for baseline scores, with those in the EC group having a more positive perceived control over behaviour than the control?
- v. Would EC affect intention towards behaviour change after controlling for baseline score, with those in the EC group having a more positive intention towards behaviour change than the control?
- vi. Would participants in the EC group will choose not to smoke than those in the control condition?
- vii. Would self-efficacy will moderate the relationship between EC and smoking behaviour?

Purpose of the Study

The major aim of this study is to investigate the effect of Evaluative Conditioning (EC) and self-efficacy on attitudes of smokers. Prevalence of cigarette smoking and its tremendous health consequences triggered the researcher to embark on this study. The specific purposes of this study are outlined as follows:

- i. To investigate whether EC will affect attitude towards smoking behaviour after controlling for baseline scores, with those in the EC group having a more negative attitude toward smoking than the control condition.

- ii. To investigate whether EC will affect attitude towards behaviour change after controlling for baseline scores, with those in the EC group having a more positive attitude toward behaviour change than the control.
- iii. To observe whether EC will affect self-identity towards behaviour change after controlling for baseline scores, with those in the EC group having a more positive self-identity towards behaviour change than the control.
- iv. To investigate whether EC will affect perceived control over behaviour after controlling for baseline scores, with those in the EC group having a more positive perceived control over behaviour than the control.
- v. To investigate whether EC will affect intention towards behaviour change after controlling for baseline scores, with those in the EC group having a more positive intention towards behaviour change than the control.
- vi. To ascertain whether participants in the EC group will choose not to smoke than those in the control condition.
- vii. To observe whether Self-efficacy will moderate the relationship between EC and smoking behaviour.

Operational Definition of Terms

Smoking Behaviour

Smoking behaviour refers to the practice of inhaling tobacco substance which absorbed into the blood stream and harm virtually all parts of the body. It is also choosing to smoke and not choosing to.

Attitude

Attitude is defined as disposition of behaviour in a particular behaviour.

Types of attitudes as discussed in this research are:

Attitude Towards Smoking Behaviour (ATSB)

This refers to the fact that people learn attitude towards smoking behaviour the same way they learn other behaviours as measured by Van den Pulte, Yzer, Willemsen, and de Bruiji (2009).

Attitude Towards Behaviour Change (ATBC)

This is defined as the relationship between attitude and behaviour change as measured by Armitage and Conner (1999).

Self-Identity Towards Behaviour Change (SITBC)

This is defined as the behaviours that are associated with one's roles as measured by Armitage and Conner (1999).

Perceived Control Over Behaviour (PCOB)

This refers to an individual's perceived ease or difficulty of performing that particular behaviour as measured by Ajzen (2013).

Intention Towards Behaviour Change (ITBC)

This refers to an indication of an individual's readiness to perform a given behaviour as measured by Ajzen (2013).

Evaluative Conditioning

This is defined as the process of forming a desired or undesired attitude by pairing conditioned stimulus with unconditioned stimulus.

Self-Efficacy

This refers to one's belief in ability to complete a given tasks as measured by Schwartz and Jerusalem (1995).

CHAPTER TWO

Literature Review

Despite the fact that many researchers have carried out studies on the impact of evaluative conditioning towards attitude change, it was observed that the objectives and settings of these studies are slightly related from one another. Some of these studies were reviewed in this chapter which comprises of four parts; Theoretical review, Empirical review, Summary of review and Hypotheses.

Theoretical Review

Studies on the use of evaluative conditioning for attitude change remain incomplete without some attempts to assess the degree to which behaviour change is related to evaluative conditioning in the light of several attitude change theories, health behaviour theories and learning theories, propounded by some educated elites, psychologists and philosophers. Some of these theories are:

- Classical Conditioning Theory,
- Two-Process Model of Perceived Control,
- Theory of Planned Behaviour,
- Social Cognitive Theory,
- Self-Control Theory,
- Social Judgment Theory,
- Elaboration Likelihood Model, and
- Dissonance Theory of Attitude Change.

Classical Conditioning Theory (CCT)

Classical conditioning and operant conditioning are mainly learning theories that fasten the process of attitude change. Classical conditioning is the brain child of Pavlov (1988). Classical conditioning theory deals with paired of a conditioned stimulus with an unconditioned stimulus and the conditioned stimulus (CS) is a neutral stimulus; while the unconditioned stimulus (US) is biologically potent and the unconditioned response (UR) to the unconditioned stimulus is an unlearned reflex response. The conditioned response (CR) will occur independently after the conditioned stimulus was severally paired with the unconditioned stimulus and that conditioned response is virtually similar to the unconditioned response. Pavlov ascertained and disclosed major facts about classical conditioning via his famous experiments with dogs. Also, conditioning is either forwarding or backwarding in nature. During forward conditioning, the onset of the CS precedes the onset of the US; while backward conditioning occurs when a CS immediately follows a US. Learning is fastest in forward conditioning. As classical conditioning deals with pairing of conditioned stimulus with conditioned stimulus, Operant conditioning has it that the consequence of behaviour determines its reoccurrence in the future. This scenario was emphasized on more in the law of effect, which states that behaviours followed by satisfying consequences tend to be repeated and those that produce unpleasant consequences are less likely to be repeated. However, classical and operant conditioning can be used to strengthen desirable attitudes and weaken undesirable ones like smoking behaviour.

Classical conditioning theory has it that the association between conditioned stimulus and unconditioned stimulus produces a response. Consequently in Evaluative Conditioning, associating the appearance of cigarette and smoking aversive image will produce a response either to smoke or not.

Two-Process Model of Perceived Control (TPMPC)

This is a health behaviour theory postulated by Rothbaum, Weisz, and Snyder (1982). This theory dwelt much on the outstanding differences between primary control and secondary control. Primary control focuses on changing the world. It involves taking action to get desired outcomes. While the secondary control deals with changing one's self to adjust to the environment. Secondary control enhances one's personal control and both direct action on the environment and adjusting to the environment are sources of personal control. For example, availability of cigarette in the environment makes people vulnerable to engage into smoking behaviour. Rothbaum et al., (1982) posits that avoiding primary control will strengthen our future survival. According to Festinger (1957) theory of cognitive dissonance, we either change the things we perceive (primary control) or the things we want (secondary control) by cognitive reevaluation.

In Two process model of perceived control theory, the direct action on the environment (changing the world) paired with adjustment to the environment (changing the self) is source of control over behaviour. In the same vein, pairing cigarette appearance and smoking aversive image in EC will determine one's control over smoking behaviour.

Theory of Planned Behaviour (TPB)

This is a health behaviour theory proposed by Ajzen (1988; 1991). It is a theory that links beliefs and behaviour. It is one of the most predictive persuasion theories that is applied to studies of the relationship among beliefs, attitudes, behavioural intentions and behaviours in many areas of endeavours such as healthcare, advertising, public relations, and the likes. The theory was developed from the theory of reasoned action (TRA) proposed by Fishbein and Ajzen (1975), which stated that if people evaluate the suggested behaviour as positive and think that

significant others want them to perform the behaviour, they are more likely to do so. However, TPB is human behaviour predictive model and that is why health and nutrition fields have been using it in their studies. TPB would better help to predict health-related behaviour (Ajzen, 1989), and it has improved the predictability of health-related fields such as diet choice and condom use (Ajzen, & Driver, 1992).

In the theory of planned behaviour, the link of beliefs with behaviour will lead to change in such behaviour. Similarly, the link of cigarette with smoking aversive image in EC will lead to change in smoking behaviour.

Social Cognitive Theory (SCT)

This is the brain child of Bandura (1986) and an extension of a behavioural theory called social learning theory which states that, individuals learn behaviours by observing similar others who receive reinforcement or punishment for such behaviours. According to Bandura in SCT, self-regulatory systems (internal controls) over one's behaviour guide behavioural decisions, and he defined self-regulation as the exercise of influence over one's behaviour. In SCT, one's ability to self-regulate depends on the presence of two efficacies which are self-efficacy and response efficacy. Self-efficacy is the belief that one can perform behaviour, for example, smoking of cigarette. Bandura's social cognitive model posits that behaviours, environment, and cognitive factors influence self-efficacy. Self-efficacy is widely applied in health behaviour change. As such, cognitive and behavioural psychotherapy for depression are based on theoretical concepts of self-efficacy (Bandura, 1986). On the other hand, response efficacy component according to Bandura, refers to beliefs that certain behaviour will reach a desired outcome. For example, quitting smoking behaviour prevents cardiovascular diseases. Response efficacy, therefore, is a belief in the efficaciousness of the health behaviour. Thus, the higher the self and response

efficacy, the more likely that such behaviour will be exhibited. Social cognitive theory revolves around the process of knowledge acquisition or learning directly correlated to the observation of models, and models can be those of an interpersonal imitation or media sources (Bandura, 1988).

Social cognitive theory is of the view that the association between internal factors, like emotion, thinking, learning and the likes guide our behavioural decision towards change. Consequently, the association between cigarette and smoking aversive image will guide our smoking behavioural decision.

Self-Control Theory (SCT)

This theory was postulated by Rosenbaum (1983). He defined self-control theory as the ability to monitor and inhibit one's own emotions, thoughts, and behaviours. The criminological perspective posited the lack of individual's self-control as the main factor behind criminal and unhealthy behaviours like stealing and smoking. Examples of efforts to exert self-control include working to improve one's posture, stopping smoking behaviour, maintaining a low-fat diet, and suppressing specific thoughts (Rosenbaum, 1983). The self-control theory in relation to crime suggests that individuals who were not brought up by their parents before the age of eight develop less self-control than those who were raised with their parents and that low levels of self-control are correlated with criminal conduct (Muraven, Greg, & Dikla, 2006).

In self-control theory, the ability of one to monitor, inhibits and pair his or her own emotions, thought and behaviour determine whether the person will be changing his or her attitude. Consequently, pairing of cigarette appearance with smoking aversive image in EC will determine whether one will change his or her smoking attitude.

Social Judgment Theory (SJT)

This is an attitude change theory through persuasion proposed by Sherif (1963) and Sherif and Hovland, (1961). Sherif and Sherif defined SJT as the perception and evaluation of an idea by comparing it with current attitudes. It attempts to explain how attitudes are expressed, judged, and modified (Darity, 2008). A judgment occurs when a person compares at least two stimuli and makes a choice about them. With regard to social stimuli specifically, judgment processes encompasses of both past experiences and present circumstances (Sherif, 1963). It also focuses on how people's prior attitudes distort their perceptions and how perception intervenes with persuasive messages. In a nut shell, SJT assumes that a person's own attitudes serve as a judgmental standard that influences how persuasion will perceive (Sherif & Hovland, 1961). Sherif, Sherif, and Nebergall (1965) has it that individual's initial attitude serves as an anchor for the judgment of related attitude. The audiences will likely change their attitudes when they judge the message to be on side of acceptance than when it is at rejection side.

In Social Judgment Theory, the perception and evaluation of an idea by pairing it with current attitude helps one to form association between such stimuli or ideas that will lead to attitude change. Consequently in EC, the association between cigarette appearance and smoking aversive image leads to attitude change.

Elaboration Likelihood Model (ELM)

ELM is an attitude change theory through persuasion developed by Petty and Cacioppo (1980). The model aims to explain different ways of processing stimuli and their outcomes on attitude change. Persuasion occurs when readers or viewers learns a message from what they read or view. As a result of inconsistency between attitudes and behaviours, Petty and Cacioppo developed the ELM as their attempt to account for the differential persistence of communication-

produced attitude change. They suggested that different theories on attitude persistence could be viewed as stressing one of two routes to persuasion presented in their elaboration likelihood model: the central route and the peripheral route.

Central route: This is most appropriately used when the receiver is motivated to think about the message and has the ability to think about the message. If the person is motivated about the message, then that person will elaborate on the message. Persuasion is likely if the receiver thinks favorable thoughts about the message.

But in *peripheral route*, the receiver is not motivated to listen to the message. It includes such communication strategies as trying to associate the advocated position with things the receiver already thinks positively towards. The message sent through peripheral route is not analyzed cognitively. The peripheral route is weaker than central route.

In ELM, pairing of motivation with characteristics of the message determines whether people will alter their attitudes. Similarly in EC, pairing of cigarette appearance with smoking aversive images determine whether smoking attitude will be altered.

Dissonance Theory of Attitude Change (DTAC)

Dissonance theory is also called cognitive dissonance theory. It is an attitude change theory postulated by Festinger (1957) which stated that, human beings strive for internal consistency and when they experience inconsistency or dissonance, they tend to become psychologically uncomfortable and avoid situations and information likely to increase it. Also, people can alter their attitudes when they have conflicting beliefs about an issue. They often change their attitudes so that the tension produced by their incompatible beliefs will be shortened. Festinger's (1957) cognitive dissonance theory suggests that we have an inner drive to hold all our attitudes and beliefs in harmony and avoid disharmony. Attitudes may change

because of cognitive or inner drive consistency or inconsistency, which is the peak of Festinger's theory of cognitive dissonance.

In Dissonance theory, the association between conflicting attitudes and beliefs lead to an alteration in behaviours. Consequently in Evaluative conditioning, the association between cigarette appearance and smoking aversive image determines whether smoking behaviour will be altered.

Health related theories, learning theories and attitude change theories were reviewed in this study because, smoking behaviour is unhealthy behaviour and an attitude which can be easily learnt. Therefore, application of these theories will go a long way subsidizing unhealthy behaviours, like smoking.

Empirical Review

The Empirical Review in this study was looked at under the following subheadings:

- Smoking Behaviour,
- Evaluative Conditioning,
- Classical Conditioning,
- Evaluative Conditioning and Attitude Change,
- Attitude towards smoking behaviour,
- Attitude Towards Behaviour Change,
- Self-Identity Towards Behaviour Change,
- Perceived Control Over Behaviour, and
- Intention towards Behaviour Change.

Smoking Behaviour

There are numerous studies which are related to smoking in terms of its starting age, prevalence, prohibition, consequences and gender stand. Take for instance, it was assumed that within the health community, smoking behaviour is largely fixed by the age of 18 years based on research finding that virtually all smokers begin smoking before the age 18 (Giovino, 1999; U.S. Department of health and human services, 1994). Smoking behaviour is not most affixed among young adults according to research finding because, as many as one fifth of smokers start smoking after the age of 18 (U.S. Department of health and human services, 1999; Lantz, 2003).

Moreover, people smoke for different reasons. In some cases, body gets addicted to smoking behaviour by producing lower base levels of dopamine which in turn leaving smokers to demand cigarettes to feel happy. In line with this, among fifty million Americans who smoke, 70% wish to quit smoking, but only 3% of these individuals succeed (Roizen, 2004). It may be used to ease stressful situations while carry out one's task. Thus, smoking behaviour for a young adult serves as a source of balance at a time when life is chaotic and stressful (Reynold Tobacco Company, 1985). Another finding posits that parental and sibling smoking behaviour may be more important earlier to influence a child (Mercken, Candel, Willems, & de Vries, 2009). Smoking behaviour is a social activity adopted during adolescence stage (Turner, Mermelstein, & Flay, 2004). Peer group influence is a significant factor in uptake of smoking (Conrad, Flay, & Hill, 1992; Walsh & Tzelepis, 2007). It is an important factor in future smoking intentions among adolescent smokers and nonsmokers (Ling and Glantz, 2002; Vitoria, Salgueiro, Silva, & De Vries, 2009), as well as in the development of nicotine dependence in adolescent smokers (De Leeuw, Engels, Vermulst, & Scolte, 2009). Peer group may influence the decision to smoke or not to. This researcher puts that as pivot agent of socialization, peer group influences one

another's behaviour negatively or positively. For instance, if a person smokes, he or she will automatically influence friends. But the nature of peer influences on smoking changes over time and across social and cultural groups (Michell, 1997).

Smoking behaviour remains a significant public health problem and without improved treatment, mortality rate sky rockets (Lenhard, 1996). Annually, about 4.9 million people worldwide die as a result of smoking (Robert & Shiffman, 2007). Cigarette smoking behaviour harms nearly every organ of the body, causes many diseases, and reduces the health of smokers in general (U.S. Department of health and human services, 2014, 2010). Smoking tobacco is among the leading causes of many diseases such as lung cancer, heart attacks, chronic obstructive pulmonary disease (COPD), erectile dysfunction, and birth defects and as a result of this, many countries have institute high taxes on tobacco products and provide help with quitting for smokers (Tobacco Fact Sheet, 2014). Also, forty percent of stroke victims are smokers (Roizen, 2004).

People who smoke fewer than five cigarettes a day can have early signs of cardiovascular disease (U.S. Department of health and human services, 2014), and those below the age of fifty may increase their risk of a fatal heart attack when compared to non-smokers (Edwards, 2004). Smokers are at the greater chance for diseases that affect the heart and blood vessels- cardiovascular disease and it also damages blood vessels making them thicken and grow narrower. This makes the heart to beat faster and blood pressure to go up; clots can form too (U.S. Department of health and human services, 2014, 2010). Research has found a close link between smoking and lung cancer (Doll & Hill, 1950). In line with this, smoking behaviour can cause cancer almost anywhere in the body like in: bladder, cervix, colon, and rectum, esophagus, kidney and ureter, larynx, liver, oropharynx, pancrease, stomach, trachea, bronchus and even

lungs (U.S. Department of health and human services, 2014, 2010). Smoking behaviour can affect men's sperm and causes miscarriage and broken bones in women (U.S. Department of health and human services, 2014). It affects woman conception, increases risk for preterm delivery, stillbirth, low birth weight, sudden infant death syndrome, ectopic pregnancy, and orofacial clefts in infants (U.S. Department of health and human services, 2001, 2010, 2014). The risk of developing diabetes is higher for smokers than nonsmokers (U.S. Department of health and human services, 2010, 2014).

In studies about smoking behaviour of college students, Borders, Xu, Donna, Lee, and SoRelle-Miner (2005) found that students who were educated about smoking were 23% less likely to become smokers than students who were uneducated about it. Biasco and Hartnett (2005) found that students with higher levels of stress were more likely to smoke and that a quarter of the students began smoking after entering college. Furthermore, economic research on smoking behaviour has focused mainly on price and income elasticity of smoking (Chaloupka & Pacula, 1999). To back it up, Snell (2005) posits that lower socio-economic status increases the probabilities of one to engage in a positive attitude towards smoking and then begin to smoke. This determines the likeliness of getting addicted with cigarettes as well as the cost of changing one's behaviour as a smoker (Orphanides & Zervos, 1995). DeCicca, Kenkel, and Mathios (2002, 2005) have support the idea that young smokers are sensitive to price changes, while other researchers like Carpenter and Cook (2007) contradicted this view. Gallet and List (2003) posits that any study on smoking that has young people as participant is required to assess the strength of price on their responsiveness towards smoking. Harris and Chan (1999) have investigated the potential for price to influence different stages of young people's smoking decisions and their result supported that price influences smoking behaviour. Moreso, Snell

(2005) found poor academic performance and using alcohol or illegal drug as correlating with adolescent smoking behaviour; but health promoting activities such as engaging into sports decreases the likelihood of smoking behaviour. According to this researcher, this is a depict illustration of sublimation defense mechanism. Also, the belief that smoking causes immediate negative side effects significantly decreases one's likelihood of becoming a smoker, whereas positive attitudes toward smoking are good predictors of regular smoking (Snell, 2005).

Smoking in the workplace affects productivity and the workers as well. Thus, Waa and McGough (2006) reported 8.4% of New Zealanders of being exposed to smoking health challenges in the workplace. This level remains high even though New Zealand introduced the Smoke free Environments Act in 1990 which effectively prohibited smoking in all indoor work spaces. This means that some non-active smokers were also exposed to tobacco smoke in the workplace. Perhaps, spending just one hour in a smoky environment is as good as smoking four sticks of cigarettes (Roizen, 2004), and people exposed to second hand smoking (SHS) in their home or workplace may increase their risk of lung cancer or heart disease (U.S. Department of health and human services, 2006). Research on the effect of smoking on productivity and health has shown that the amount smoked is dependently related to workplace absenteeism (Halpern, Shikiar, & Rentz, 2001; Health Canada, 2008). It causes diminished overall health increase absenteeism from work, and increased health care utilization and cost (U.S. Department of health and human services, 2014). Throwing more light, smokers had more sick-leave than nonsmokers (Halpern, et al. 2001). They also found that smokers are generally less productive in the workplace than nonsmokers. A survey carried out on GlaxoSmithKline workplaces in the United Kingdom found that 43% of total working hours lost was due to the 23% of employees who smoked while at work (Ryan & Crampin, 2006).

Evaluative Conditioning (EC)

EC is noticed when a neutral conditioned stimulus is paired with an effective or unconditioned stimulus (Levey & Martin, 1975). In consumer research for instance, EC is evidenced when brand names (CSs) are paired with stimuli that evoke favorable affective responses (USs). Evaluative conditioning researches reveal that its effects have been attributed to the operation of different mental processes (De Houwer, Thomas, & Baeyens, 2001). Also, Behaviourist assumed that direct mental connections could be forged between the CS and the physiological response triggered by the US and such stimulus response associations was supposed to be possible without establishing a CS-US relation (Thorndike, 1911; Watson, 1913). As such, the affective response to the CS is assumed to be direct.

Field (2002) raises several objections to interpretation of the EC studies. She suggests that EC awareness measurement occurs hours after the conditioning procedure. She posited that awareness is measured subsequent to the re-iterating of test stimuli. Contrary to this proposition, Fulcher and Cocks (1997) showed empirically in their EC study that participants were significantly less able to recall UCSs following a standard EC rating stage than when asked to recall UCSs immediately after conditioning. Again, different conditioning procedures might encourage different learning processes. For instance, EC procedures may encourage the formation of association between a name brand and affect inducing concepts (De Houwer, Thomas, & Baeyens, 2001; Gawronski & Bodenhouse, 2006). Also, other EC procedures may result in the brand name generating the affective response directly (Olson & Fazio, 2009). Pleyers, Corneille, Luminet, and Yzerbyt (2007) found that using a rigorous design and sensitive awareness measures decreases the possibility of CSs to be paired with their US in the evaluative conditioning of task. Moreover, studies that relied on psycho-physiological measures

of valence acquisition by Dawson, Rissling, Schell, and Wilcon (2007) and those that affect sensorial modalities (Wardle, Mitchell, & Lovibond, 2007) failed to obtain evidence for EC in the absence of awareness for CS-US pairing. It was also found that EC was less likely to emerge when participants's resources were concurrently used by a secondary task during conditioning (Field & Moore, 2005).

EC studies investigated other types of information like the effect of relational qualifiers that explain the relation between the co-occurring stimuli and found that people's evaluation takes the relational information into account (Fielder & Unkelbach, 2011; Forderer & Unkelbach, 2012; Zanon, De Houwer, Gast, & Smith, 2014). In evaluative conditioning studies, environment moderates the effect of co-occurrence on evaluation (Bar-Anan & Dahan, 2013; Zanon, De Houwer, & Gast, 2012), and instructions about how to encode the co-occurrence moderated the effect of co-occurrence on evaluation (Balas & Gawronski, 2012; Gawronski, Balas, & Creighton, 2014). On the factors that inhibit evaluative conditioning for example, Walther and Grigoriadis (2004) showed that EC is more pronounced when individuals feel sad than happy. Thus, when individuals feel happy, each conditioned stimulus activates the neutral face and the cognitive processes associated with each feature. In their study, Baeyens, Eelen, Van den Bergh and Crombez (1989) aimed at overcoming some conceptual and methodological limitations of the aforementioned experiments where they predicted an effect of perceptual similarity in EC but found none. However, other studies observed EC effects when arranging for CS-US pairing that was structurally not similar, such as pairing nonsense syllables with the immersing of hand in cold water (Faw & Parker, 1972).

Olson and Fazio (2006) demonstrated that EC can effectively decrease implicit racial prejudice. Evaluative conditioning has also been associated with the development of food like

and dislike. Humans are possibly going to dislike any foods that produce negative consequences such as nausea, rashes, diarrhea, and breathing problems (Pelchat and Rozin, 1982). Pairing obese bodies or poor health outcomes with foods changed explicitly measured evaluations (Lascelles, Field, & Davey, 2003), as well as implicitly measured evaluations and behaviours regarding the foods (Hollands, Prestwich, & Marteau, 2011). Food aversions are attributed to the taste or flavour of food, while a proportion of aversions are related to smell (de Silva & Rachman, 1987). Liking for unsweetened vegetables and unfamiliar teas increases after they have been consumed sweetened on a number of occasions (Eertmans, Baeyens, & Van de Bergh, 2001; Capaldi, 1996). Taste aversions are derived from various situations, such as food poisoning, allergic reactions, over consumption and some medical treatment (Batsell & Brown, 1998). It has also been demonstrated that flavour-flavour conditioning can occur through observation (Baeyens, Crombez, De Houwer, & Eelen, 1996). With observational EC, participants observe a social model being exposed to a CS-US association. The model tastes a food and shows his or her reaction by facial expression or other gestures. When observers rate the target stimulus after observing the model's reaction, an EC effect can be observed. Also, willingness to try new foods increases after providing people with verbal information that the foods taste good. Flavor-flavour conditioning can also occur by using written messages (Pelchat & Pliner, 1995). Baeyens, Eelen, Van den Bergh, and Crombez (1990) have illustrated how people form associations between stimuli presented together. Indeed, the manipulation of our evaluation of a neutral stimulus paired with an attractive stimulus is the basis for all advertising. For example, Smith and Engel (1968) showed half of their participants a picture of a car, while the other half were shown the same car with an attractive model next to it. Those that viewed the car with the model rated it as more appealing and better designed.

Evaluative conditioning has been shown to influence affect for words from the verbal conditioning paradigm developed by Staats and Staats (1957). Jaanus, Defares, and Zwaan (1990) demonstrated that nonsense words paired with either positive or negative valenced words acquired the same affective value of the words with which they were paired. According to Bliss-Moreau, Owren, and Barrett (2010) in evaluative condition of voice study, individuals can learn to develop positive associations with specific voices as well. This implies that if speaker produces positive words, listeners tend to like the subsequent words this person utters. In another development, Dijksterhuis (2004) showed how evaluative conditioning can even influence self-esteem. Some participants were exposed to a series of positive words that coincided with the letter 'o' in his experiment and the protocol improved evaluations of the letter. Because this letter is associated with the self, self-esteem also improved.

Classical Conditioning

As the brain child of Pavlov, classical conditioning deals with pairing of conditioned stimulus with unconditioned stimulus to elicit an unconditioned response which is similar to conditioned response. One of the most famous empirical studies on classical conditioning was Watson (1913) experiment in which a fear response was conditioned in a boy known as Little Albert. The child initially showed no fear of a white rat, but after the rat was paired repeatedly with loud scary sounds, the child would cry when the rat was present. Before the conditioning took place, the white rat was a neutral stimulus. The unconditioned stimulus was the loud, clanging sounds and the unconditioned response was the fear response created by the noise. Another empirical example of classical conditioning can be seen in the development of conditioned taste aversions. In their study, Garcia and Koelling (1966) first noticed this phenomenon when they observed how rats that had been exposed to a nausea causing radiation

developed an aversion to flavoured water after the radiation and the water were presented together. In this context, the radiation represents the unconditioned stimulus and the nausea represents the unconditioned response and after the association of the two, the flavoured water is the conditioned stimulus, while the nausea that formed when exposed to the water alone is the conditioned response.

Classical conditioning helps us to understand the notion behind addiction or drug dependence. In the case of psychoactive drugs for example, many factors affect the development of drug tolerance, and learning is one of them. Siegel, Hinson, Krank, and McCully (1982) found that rats can be classically conditioned to develop tolerance to heroin. They wanted to understand why some addicts died after taking a dose of the drug that they had taken many times before. Drug overdose was officially observed as the cause of death because the dose was high enough to kill most people not addicted to the drug. Again, the repeated use of a drug could cause the body to request for it in order to equate the effects of the drug (Goldman, 2012). The development of tolerance also takes into account other environmental variables. For instance, alcohol tends to taste a certain way and when it is consumed in the usual way, the body responds in an effort to counteract the effect (Goldman, 2012). He posited as well that environmental context can prompt the body to prepare for the drug if the conditional stimuli are absent and the body is not able to adequately prepare itself for the drug.

According to McLeod (2014), the impacts of classical conditioning in the classroom can never be underrated, and that there is need for teachers to try to make sure that students associate positive emotional experiences with learning. If a student pairs negative emotional experiences with school for instance, this will negatively influence his or her results. This scenario explains why many students dislike certain subjects over others. In another study, Goldman (2012) found

that classical conditioning is known to trigger appetizer. Assuming there are neutral stimuli that consistently predict a meal, they could cause people to become hungry because, those stimuli induce involuntary changes in the body as a preparation for digestion. He also posited that classical conditioning is used in wildlife preservation efforts which prevent farmers from killing the lions. In this case, the meat is the conditioned stimulus, when paired with the deworming agent (UCS) elicits conditioned response which is feeling of being sick.

Evaluative Conditioning and Attitude Change

In their empirical study, Balas and Sweklej (2013) changed attitudes about the homeless through the use of evaluative conditioning. Instead of using national names, they paired pictures of the homeless with chocolate in order to create a change in explicit attitudes. Likewise, French, Franz, Phelan, and Blaine (2013) researched on changing attitudes towards Middle Eastern people by paired their pictures with positive words. Participants in conditioning group showed an increase in implicit attitudes on the implicit attitude test (IAT) towards Middle Eastern people. Evaluative conditioning can be used to change attitudes across all groups of people, not just the homeless. Similarly, Gibson (2008) used brands Coke and Pepsi as their conditioned stimulus and these brands were paired with both positive words and positive pictures. His study showed a change in both implicit attitudes and brand choice. Implicit attitudes towards Coke and Pepsi were only changed when participants felt neutral about the products. Gibson succeeded influencing brand choice only when mental effort in the working memory is being used. Strick, van Baaren, Holland, and Knippenberg (2009) paired energy drink brands with humorous advertisements, which created an increase in explicit attitudes about the product. They demonstrated that evaluative conditioning can be used to increase explicit attitudes and possibly influence brand choice in the field of advertisement and many companies adopted this strategy.

When something funny was paired with an energy drink brand, people are more likely to pick it. In evaluative conditioning and changing food preference study, Ebert, Steffens, von Stülpnagel, and Jelenec (2009) paired candy brands with valence words. Results showed an increase in implicit attitudes when candy brands were paired with positive word and for brand choice, there was no effect. This could be due to the fact that the candy brands are mature brands and to change preference for matures brand is difficult.

Evaluative conditioning can also be used to condition attitudes on self-esteem. For instance, study of Grumm, Nestler and von Collani (2009) were successful at using evaluative conditioning to change attitudes on self-esteem. In their experiment, the word *óíô* was paired with positive words and the results showed an increase for implicit attitudes, but not explicit. When the experiment was replicated using introspection manipulation, participants then showed an increase in both implicit and explicit attitudes. Baccus, Baldwin, and Packer (2004) paired relevant self-words with pictures of smiling faces in order to cause a change in attitudes. Participants showed an increase in implicit attitudes towards self-esteem. In the same vein, Martijn, Vanderlinden, Roefs, Huijding, and Jansen (2010) used evaluative conditioning to change attitudes about self-body image where pictures of the participantsö bodies were paired with either smiling, frowning, or neutral faces. Conditioning was successful for explicit attitudes. While Baccus et al., (2004) were able to change implicit attitudes, Martijn et al., (2010) were able to change explicit attitudes. Hong and Chan (2009) succeeded using evaluative conditioning to change both explicit and implicit attitudes toward self-esteem. In their experiment, five words about the self and five words about a general other were paired with abstract paintings and both implicit and explicit attitudes of self-esteem increased for the participants in the conditioning group.

Attitude Towards Smoking Behaviour

According to Ajzen (2001), attitude may be an important determinant of unhealthy behaviours, like smoking and that attitude of smokers towards smoking is positive due to its reinforcement qualities. As such, positive attitude towards smoking might be one of the driving forces behind the persistence of smoking behaviour. Again, Swanson, Rudman, and Greenwald (2001) found implicit attitude toward smoking to be more positive than that of nonsmokers. These findings cast doubt on the idea that habitual smokers' attitudes toward smoking are an important driving force in the continuation of smoking. The type of measurement instrument that used to assess implicit attitudes towards smoking affects the research outcome as well (Swanson et al., 2001). In another development, studies using self-report measures revealed that smokers' attitude toward smoking is negative rather than positive (Chassin, Presson, Sherman, & Edward, 1999; Swanson, Rudman, & Greenwald, 2001). This suggests that factors other than attitudes are the motor behind smoking behaviour. It could be that smokers are in fact characterized by a positive attitude toward smoking, but are unwilling to reveal this because of stigmatization.

Again, situational context and internal context may influence emerging attitude (Sherman, Presson, Chassin, Rose, & Koch, 2003). Thus, it has been found that different association between contexts can yield a different response (Bouton, 2002). Dols, Van den Hout, Kindt, and Willems (2002) found that association with contextual cues may define the importance of an attitude. In line with this, studies have shown that when people are deprived of nicotine and exposed to smoking cue, they generate more positive characteristics towards smoking (Sayette & Hufford, 1997). As such, developing negative attitude towards smoking may be due to the actual measurement setting.

Attitude Towards Behaviour Change

Attitude change is a necessary precursor to behaviour change (Bettinghaus, 1986; Ajzen, & Fishbein, 1980). It is also possible that behaviour changes like quitting or starting smoking have an influence on attitude or that attitude and behaviours change concurrently (McBroom & Reed, 1992). Petty, Wegener and Fabrigar (1997) reported that several materials were produced concerning attitude structure, attitude change, and the consequences of holding attitude. Thus, the most fundamental assumption underlying the attitude concept is the notion that attitude is some way guide, influence, direct, shape, or predict actual behaviour (Ajzen & Fishbein, 1974; Kraus, 1995). Researches on the attitude-behaviour relation have been conducted within the framework of the theory of reasoned action (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975). According to Krosnick, Judd, and Wittenbrink (2005), the pivot issue in the study of behaviour change is the concept of attitude. Wicker (1969) concluded that, it is more likely that attitudes will be unrelated or slightly related to overt behaviours than those attitudes will closely relate to action. This finding resulted in considerable controversy and caused many researchers to question seriously whether attitude was still useful as a scientific construct to predict behaviour (Fishbein & Ajzen, 1975; Tuck, 1976; Ajzen, 1987; Kraus, 1995). The assumption that attitude is useful for predicting behaviour went unchallenged until the 1960s (Ajzen & Fishbein, 1980). The criticism was because, attitude research failed to provide strong support for the behavioural consistency (Tuck, 1976; Eagly & Chaiken, 1993; Kraus, 1995).

Self-Identity Towards Behaviour Change

One's self-identity determines whether his or her behaviour will be altered. Identity theory has it that people think of themselves in terms of social roles (Stets, 2006). Thus, self-identity reflects the value and behaviours that are associated with these roles. Stets also posits

that when people have multiple social roles, some will be self-identifying than others. The more central a certain role is to someone's self-identity, the more likely the behaviours associated with this role will be performed. Similarly, social identity theory describes self-identity in terms of the social groups or social categories that someone belongs to (Hogg, 2006). In regards to this, self-identity based on group membership determines whether certain behaviour is appropriate or not. Since self-identity reflects individual's values (Hagger, Anderson, Kyriakaki, & Darking, 2007; Hilton, 2003), certain behaviour is likely to occur if it is related to individual value system.

Nevertheless, social roles, group norms, and individual idiosyncrasies work in concert to produce someone's sense of self-identity. Thus, at the centre of someone's behaviour is self-identity (Reid & Deaux, 1996). For instance, smoking may be an important part of an individual's self-identity and effort to stop it would require a deviation from the individual's smoking identity. If the individual develops a new self-identity in terms of quitting smoking, smoking behaviour will be put to an end. For one to change a new behaviour, there is need for the person to acquire a new self-identity that matches the anticipated behaviour (Kearney & O'Sullivan, 2003).

According to Charng, Piliavin, and Callero (1988), the more often people perform a certain behaviour, the more this behaviour becomes part of their self-identity. People consume in ways that affect their sense of self (Levy, 1959; Sirgy, 1982). Consumers use possessions and brands to create their self-identities (Belk, 1988; Fournier, 1998; McCracken, 1989). White, Argo, and Sengupta (2011) found that consumers respond differently to self-threat depending on their self-construal. When interdependent selves are active, self-threat activates the need to belong. Thus, how consumers restore their sense of self after a threat depends on which self-goal is activated. Townsend and Sood (2012) explore how the choice of an aesthetically pleasing

product can affirm a consumer's threatened sense of self by linking aesthetics to personal values. They found that the choice of a highly aesthetic product meets consumers' needs to self-affirm after a self-threat. In as much as several studies have found direct effects of self-identity on behaviour change (Hamilton & White, 2008; Jackson, Smith, & Conner, 2003), some researchers have not found its direct effects on behaviour (Charng, Piliavi, & Callero, 1988; Smith, Terry, Manstead, Louis, Kotterman, & Wolfs, 2007). Since self-identity is a determinant of behaviour, it may likely influence the decision to smoking or not.

Perceived Control over Behaviour

The concept of perceived control over behaviour is highly related with Bandura's (1977, 1982) concept of perceived self-efficacy which is concerned with how well one can execute required actions in a situation. It comprises of two components; the availability of resources needed to engage the behaviour (example money and time), and the focal person's self confidence in the ability to conduct the behaviour (Ajzen, 1991; Taylor & Todd, 1995). Confidence affects the ability to perform any behaviour. The confidence denotes that the person has volitional control over his behaviour. Thus, any behaviour under consideration must be under volitional control (Fishbein & Ajzen, 1975). They also said that behaviour may be said to be completely under a person's control if the person can decide at will to perform it or not. In a reversed way, if behaviour depends on a particular circumstance to occur, it has less volitional control. Some behaviours are more complex than others to perform and when a person perceives a behaviour as being complex to perform, his or her perceived behavioural control over it will be low (Ajzen, 1991). In support to that, control over behaviour may appear to apply to only a limited range of behaviours (Ajzen, 1985). Thus, one may have control over certain behaviours, while others are influenced by factors beyond one's control. As such, perceived behavioural

control can be used to predict behaviour indirectly through intention. Boudewyns (2013) opined that attitudes and subjective norms should perform less well in explaining intentions when perceptions of behavioural control are low.

Intention Towards Behaviour Change

Intention towards behaviour is an individual's readiness to perform a given act or behaviour which is assumed to be an immediate antecedent of behaviour (Ajzen, 2002). It is based on attitude toward the behaviour, subjective norm and perceived control. Ajzen defined behaviour as an individual's observable response in a given situation which is a function of compatible intentions; thus, intention produces behaviour only when perceived behavioural control is strong. The intention to perform behaviour can be translated into actual behaviour. As an instance, research indicates that the intention to use condoms predicts condom use, while the intention to attend for breast screening practices predicts actual attendance (Yzer, Siero, & Buunk, 2001; Sheeran & Orbell, 2000). Ajzen (1985) added that aspects that are not under a person's volitional control can as well influence formation of intentions to act.

Also, the intention to eat healthily is a successful predictor of subsequent behaviour (Povey, Conner & Sparks, 2000). In his contribution, Sutton (1998) carried out an analysis of the association between behavioural intentions and behaviour across a series of studies and concluded that intentions generally predict between 19% and 38%. This suggests that behavioural intentions may be useful predictors of successful dietary change. In contrary, studies show that dieters who make an intention to eat less or to eat more healthily may end up eating less healthily and overeating (Herman & Mack, 1975; Fedoroff, Polivy, & Herman, 1997). According to Ajzen and Fishbein (1980), intention to perform a particular behaviour is the single best determinant of that behaviour. As such, people will have strong intention to smoke if they

evaluate smoking favorably and if they believe that others who are important to them think that they should smoke.

Summary of Literature Review

Having reviewed some related literatures on evaluative conditioning and attitudes towards smoking behaviour, it is expected that evaluative conditioning will have effect on smoking behaviour change. The expected achievement of this research is that, the strength of evaluative conditioning on attitudes of smokers and whether self-efficacy will moderate EC and smoking behaviour of undergraduate students of University of Nigeria, Nsukka will be ascertained.

Hypotheses

Considering the seven outstanding research questions posed in this study, the following hypotheses were subjected to test;

- i. EC will significantly affect attitude towards smoking behaviour after controlling for baseline scores with those in the EC group having a more negative attitude toward smoking than the control condition.
- ii. EC will significantly affect attitude towards behaviour change after controlling for baseline scores with those in the EC group having a more positive attitude toward behaviour change than the control.
- iii. EC will significantly affect self-identity towards behaviour change after controlling for baseline scores with those in the EC group having a more positive self-identity towards behaviour change than the control.

- iv. EC will significantly affect perceived control over behaviour after controlling for baseline scores with those in the EC group having a more positive perceived control over behaviour than the control.
- v. EC will significantly affect intention towards behaviour change after controlling for baseline scores with those in the EC group having a more positive intention towards behaviour change than the control.
- vi. Following EC, participants in the EC group will significantly choose not to smoke than those in the control condition.
- vii. Self-efficacy will significantly moderate the relationship between EC and smoking behaviour.

CHAPTER THREE

Method

Participants

Fifty male undergraduate students of University of Nigeria, Nsukka participated in this study. The participants were volunteered smokers who had smoked for at least a year. The participants have minimum age of eighteen (18) and maximum age of thirty (30). Eighteen fit in within the ages of 18-21; eleven were between the ages of 22-25; while the remaining 11 were between 26-30. They had a mean age of 23.7000.

Materials

Materials that were used for the study included: An LG Projector, packets of Benson & Hedges, Dorchester cigarettes, Lighters, smoking aversive images, scales for all types of attitudes (ATBCS, ATBSBS, ITBCS, PCOBS and SITBCS) and self-efficacy.

An LG Projector, model-RD-JT90: This product and model was chosen because it has higher contrast ratio, lower noise level, pure colour reproduction and higher definition compatible. The Projector was used to project images of cigarettes and aversive stimuli on the screen.

Packets of Benson & Hedges and Dorchester cigarettes and Lighters: These were used to measure choosing to smoke and not choosing to smoke between the EC group and control group.

Smoking aversive images: This is a conditioned stimulus that was paired with unconditioned stimulus, cigarette images. It consists of images of mouth sore, stained fingers and teeth, cancer of the lungs, neck cancer and teeth cancer. Google search is the source of these smoking aversive images. (See appendix II for more clarifications).

Attitude Towards Smoking Behaviour Scale (ATSBS)

Attitude towards smoking behaviour was measured using six-items of ATSBS developed by Van den Pulte, Yzer, Willemsen, and de Bruiji (2009). The items were placed on a 7-point semantic differential scale that ranged from wise ñ unwise; good ñ bad; pleasant ñ unpleasant; harmless ñ harmful; enjoyable ñ unenjoyable; positive ñ negative respectively. Participants responded to the item like, 'I'm quitting smoking within the next 3 months is'. The average alpha reliability coefficient for this scale was ($\alpha = .84$) (Van den Pulte, Yzer, Willemsen, & de Bruiji, 2009). The researcher conducted a pilot study to validate this instrument in Nigerian using 20 participants from Nwafor Orizu College of Education, Nsugbe in Anambra State and a reliability of ($\alpha = .87$) was established. The higher the score, the more negative the attitude towards smoking.

Attitude Towards Behaviour Change Scale (ATBCS)

Attitude towards behaviour change was measured using four-items of ATBCS developed by Armitage and Conner (1999). Example of items in the scale include, 'Smoking in the next 2 weeks would be; Smoking at all to me is; My smoking for at least one packet per day would be; To smoke a packet of cigarette in a week for me is' placed on a 7-point semantic differential scale ranging from pleasant (1) to unpleasant (7) will be used. The higher the score, the more positive the attitude is towards behaviour change. Previous research has supported the concurrent validity of the attitude constructs with indirect, belief-based measures of attitude. The median average Cronbach alpha internal consistency statistic for the attitude measure was found to be satisfactory ($\alpha = .84$) (Armitage & Conner, 1999). The researcher conducted a pilot study to validate this instrument in Nigerian using 20 participants from Nwafor Orizu College of Education, Nsugbe in Anambra State and a reliability of ($\alpha = .82$) was established.

Self-Identity Towards Behaviour Change Scale (SITBCS)

Self-identity towards behaviour change was measured using the SITBCS developed by Armitage and Conner (1999). The scale has four items that were also placed on a 7-point semantic differential scale ranging from strongly agreed (1) to strongly disagreed (7). Items three and four were reverse scored. An example of the items in the scale is "Smoking in the next 2 weeks is an important part of who I am; I think of myself as the type of person who would smoke in the next 2 weeks; Quitting smoking within the next 3 months fits with how I want to live: With the negative implications of smoking, to me quitting is the best option". The higher the score, the more a participant's self-identity is tied to change smoking behaviour. The average alpha reliability of this scale was acceptable ($\alpha = .93$) (Armitage & Conner, 1999). The researcher conducted a pilot study to validate this instrument in Nigerian using 20 participants from Nwafor Orizu College of Education, Nsugbe in Anambra State and a reliability of ($\alpha = .71$) was established.

Perceived Control over Behaviour Scale (PCOBS)

A single item developed by Ajzen (2013) was used to measure perceived control over behaviour. Respondents were given a question like: For me to smoke on regular basis is; on a 7-point Likert-type scale, ranging from very difficult (1) to very easy (7). The higher the score the more a participant perceives control over smoking behaviour.

Intention Towards Behaviour Change Scale (ITBCS)

Three items developed by Ajzen (2013) were used to measure intention towards behaviour change. Participants were given these questions: I intend to smoke in the next 2 weeks; I intend to smoke a stick of cigarette in a week; I intend to smoke a stick of cigarette per day; I plan to quit smoking in the next months; on a 7-Point Likert-type scale ranging from

extremely likely and extremely unlikely. The average internal consistency of this scale was satisfactory ($\bar{U} = .84$) (Ajzen, 2013). The researcher conducted a pilot study to validate this instrument in Nigerian using 20 participants from Nwafor Orizu College of Education, Nsugbe in Anambra State and a reliability of ($\bar{U} = .84$) was established. The higher the score, the more the intention towards smoking behaviour change.

The General Self-Efficacy Scale (GSES)

The GSES developed by Schwartz and Jerusalem (1995) was used to measure self-efficacy. It was made up of ten items. For each of the items, there was a four choice response from "Not at all true" (1) to "Exactly true" that (4). The score for each of the ten items were summed to give a total score. For administration, this was a self-administered scale which normally takes two to three minutes to complete. It was used to identify whether one's ability to respond to and control environmental demands and challenges will affect their smoking behaviour. The total score ranges between 10 and 40, with a higher score indicating higher self-efficacy. Internal reliability for GSES was a cronbach's alphas of between ($\bar{U} = .76$ and $.90$) (Schwartz & Jerusalem, 1995). The researcher conducted a pilot study to validate this instrument in Nigerian using 20 participants from Nwafor Orizu College of Education, Nsugbe in Anambra State and a reliability of ($\bar{U} = .71$) was established.

Procedure

The fifty Participants were randomly assigned twenty five in each to either a control group or EC group. Before the manipulation of the EC, participants in both conditions were given the scales that measured attitude towards smoking behaviour (ATSB), attitude towards behaviour change (ATBC), self-identity towards behaviour change (SITBC), perceived control

over behaviour (PCOB), and intention towards behaviour change (ITBC). These measures served as base line measures or pre-test.

There after, those in the control group were shown images of cigarette packets for five seconds and immediately after that, they were shown a blank screen. Those in the EC group were shown the same packets of cigarette for five seconds, but were immediately shown an aversive image of consequences of cigarette smoking. On the whole, five images of cigarettes and aversive images were shown to participants. This was followed by a distraction task of puzzle given to entire participants to form five letter words each with letters óXYZô. This was to avoid interference.

Immediately after that, the participants in both conditions were given the scales that measure attitude towards smoking behaviour (ATSB), attitude towards behaviour change (ATBC), self-identity towards behaviour change (SITBC), perceived control over behaviour (PCOB), and intention towards behaviour change (ITBC) again. This served as a post test.

At this point, smoking choice task, as used by Ezech and Mefoh (2015) was used to measure smoking behaviour. Participants in both conditions were provided with packets of Dorchester and Benson and Hedges cigarettes and lighters with instruction that we have 20 minutes before we go to the next stage of the experiment and anybody who was willing to smoke could feel free and do so. To measure smoking behaviour, those that picked cigarettes were given score of 1; while those that did not pick were given a score 0.

Afterwards, general self-efficacy scale was administered to the participants in both conditions. This was to ascertain whether people's self-efficacy will have moderate effect between EC and smoking behaviour.

Design/Statistics

This study is a between group design. Several statistical measures were employed to measure attitudes across EC group and control condition and for hypotheses testing. To test the differences on various participants' attitudes between the control and EC group on the baseline level, t-test was employed. This was to establish whether there was a baseline mean difference in attitudes between the EC and control conditions. [If a significant difference exists, then EC procedure will not cause any effect].

Multivariate analysis of covariance (MANCOVA) was used to test the hypotheses with base line scores as covariates. Moderated logistic regression analysis was used to test choosing to smoke between the participants in the two conditions as well as to check the moderating effect of self-efficacy on the relationship between EC and Smoking behaviour.

CHAPTER FOUR

Results

To examine the effect of Evaluative Conditioning (EC) on attitude towards smoking among smokers, Multivariate Analysis of Covariance (MANCOVA) was used to analyze the data generated. The independent variable was EC while five dimensions of attitude were considered as dependent variables. To also examine whether EC predicts smoking behaviour and whether self-efficacy will moderate the relationship between EC and smoking behaviour, moderated logistic regression analysis was conducted.

Table 1: Mean of baseline scores (pre-test) for EC and control conditions on attitudes towards smoking behaviour.

Dependent Variables	EC	Control	
	Mean	Mean	Sig. t
ATSB	26.8	25.8	.380
ATBC	16.4	17.0	.585
SITBC	16.4	17.5	.280
PCOB	3.7	4.4	.097
ITBC	12.1	12.1	.967

Note: ATSB = Attitude towards smoking behaviour; ATBC = Attitude towards behaviour change; SITBC = Self-identity towards behaviour change; PCOB = Perceived control over behaviour; ITBC = Intention towards behaviour change; EC = Evaluative conditioning.

T-test was used to compare baseline scores on attitudes towards smoking between the EC group and the control group. If a difference exist then EC may not have effect on attitudes since a difference exist prior to EC manipulation. Table 1 revealed a non significant difference in

attitudes for both conditions: ATSB [$t = -.886$, $df = 48$, $p = .380$]; ATBC [$t = .550$, $df = 48$, $p = .585$]; SITBC [$t = 1.092$, $df = 48$, $p = .280$]; PCOB [$t = 1.691$, $df = 48$, $p = .097$]; and ITBC [$t = -.042$, $df = 48$, $p = .967$]. Thus, prior to EC manipulation, there was no significant difference in attitudes between EC group and control group.

Table 2: Descriptive statistics for effect of EC (post scores) on attitude towards smoking behaviour.

DVs	EC	Mean	SD	N
ATSB	EC group	34.8	3.2	25
	Control	27.6	6.1	25
ATBC	EC group	23.6	2.9	25
	Control	15.4	3.8	25
SITBC	EC group	23.7	2.9	25
	Control	15.8	4.0	25
PCOB	EC group	5.9	1.3	25
	Control	4.0	1.0	25
ITBC	EC group	18.9	1.7	25
	Control	11.2	2.8	25

Note: ATSB = Attitude towards smoking behaviour; ATBC = Attitude towards behaviour change; SITBC = Self-identity towards behaviour change; PCOB = Perceived control over behaviour; ITBC = Intention towards behaviour change; Evaluative conditioning.

Table 2 shows that the mean attitudes toward smoking behaviour after EC manipulation were higher for EC group than the control group indicating that the change in attitudes was more positive for EC group than control group. The MANCOVA Table of test of between subject effects with baseline scores as covariates is shown in Table 3 below.

Table 3: MANCOVA test of between subject effects with baseline scores as covariates.

SOV	DV	SS	df	MS	F
EC	ATSB	593.7	1	593.7	25.3*
	ATBC	876.0	1	876.0	72.8*
	SITBC	792.9	1	792.9	66.7*
	PCOB	53.9	1	53.9	43.7*
	ITBC	670.8	1	670.8	125.2*
Error	ATSB	1007.4	43	23.4	
	ATBC	517.1	43	12.0	
	SITBC	511.3	43	11.9	
	PCOB	52.9	43	1.2	
	ITBC	230.3	43	5.4	
Total	ATSB	50389.0	50		
	ATBC	20532.0	50		
	SITBC	20902.0	50		
	PCOB	1362.0	50		
	ITBC	12407.0	50		
Corr. Total	ATSB	1779.4	49		
	ATBC	1402.3	49		
	SITBC	1379.1	49		
	PCOB	112.0	49		
	ITBC	1006.5	49		

Note: ATSB = Attitude towards smoking behaviour; ATBC = Attitude towards behaviour change; SITBC = Self-identity towards behaviour change; PCOB = Perceived control over behaviour; ITBC = Intention towards behaviour change; EC = Evaluative conditioning; Corr. Total = Corrected Total; * = $p < .001$.

After controlling for baseline scores, the result of MANCOVA indicates a significant effect of EC on ATSB [$F(1,43) = 25.3$, $p < .001$]. From the mean scores, participants in the EC group had a more negative attitude towards smoking behaviour. There was also a significant effect of EC on ATBC [$F(1,43) = 72.8$, $p < .001$]. From the mean scores, participants in the EC group had a more positive attitude towards behaviour change. Result of MANCOVA further revealed a significant effect of EC on SITBC [$F(1,43) = 66.70$, $p < .001$]. From the mean scores, participants in the EC group had a more positive self-identity towards behaviour change than the control group. There was also a significant effect of EC on PCOB [$F(1,43) = 43.7$, $p < .001$]. From the mean scores, participants in the EC group had a more positive perceived control over behaviour. Finally, there was a significant effect of EC on ITBC [$F(1,43) = 125.2$, $p < .001$]. From

the mean scores also participants in the EC group had a more positive intention towards behaviour change than the control.

To test the moderating effect of self-efficacy, moderated logistic regression analysis was conducted. Logistic regression was used because the dependent variable, smoking behaviour was dichotomous (i.e. choosing to smoke and choosing not to smoke). Table 4 summarizes the descriptive characteristics of the participants.

Table 4: Descriptive characteristics of the EC group and control condition participants who chose to smoke and those that chose not.

	EC	Control
Sample (<i>n</i>)	25	25
Chose to smoke	6	18
Chose not to smoke	19	7

The Table shows that the EC group chose not to smoke more than those in the control condition. Prior to analysis, all continuous variables were centered. A one- predictor and one-moderator binary logistic regression model was fitted to the data to determine whether EC (intervention vs. control) predicts smoking behaviour and whether self-efficacy will moderate the relationship between EC and smoking behaviour. Given the base rates of smoking options for a model that includes only the constant (intercept), 24% of the participants chose to smoke while 26% chose not to smoke. A test of the full model versus a model with constant only showed that the model fits the data and was statistically significant in distinguishing between choosing to smoke and choosing not to smoke, $\chi^2(3, N = 50) = 22.84, p < .001$. The model was able to classify 92.3% of those who chose not to smoke and 66.7% of those who chose to smoke, for an overall success rate of 80%.

Logistic regression coefficients are presented in Table 5. Wald statistics indicate that EC significantly predicts smoking behaviour ($Wald = 6.00$, $df = 1$, $p = < .01$). The coefficient of the EC predictor was negative ($\beta = -1.754$), indicating that those in the EC group were predicted to choose not to smoke with greater probability than the control group. Specifically, the odd ratio (e^{β}) was found to be .15 which implies that as EC increases by 1, participants in the EC group are $1/0.15 = 6.67$ times more likely to choose not to smoke than are participants in the control condition. Self-efficacy was also found to predict smoking behaviour ($Wald$ statistics = 5.69, $df = 1$, $p = < .05$). The interaction term between EC and self-efficacy was also significant ($Wald$ statistics = 3.87, $df = 1$, $p = < .05$) indicating that Self efficacy significantly moderate the relationship between EC and smoking behaviour. The negative weight for this interaction means that the slope of the relationship is less positive for image group (1) and more positive for text group (0). Specifically, the modality effect was larger for participants in the image group who held more negative implicit attitudes towards smoking.

Table 5: Moderated logistic regression coefficient

Predictor	B	SE β	Wald's χ^2	df	p	e^{β} (Odds Ratio)
Constant	1.10	.50	4.94	1	.026	3.01
EC	-1.90	.77	6.00	1	.014	.15
SE	.38	.16	5.69	1	.017	1.47
EC*SE	-.18	.09	3.87	1	.049	.833

Figure 1: Plot for Moderation Effect.

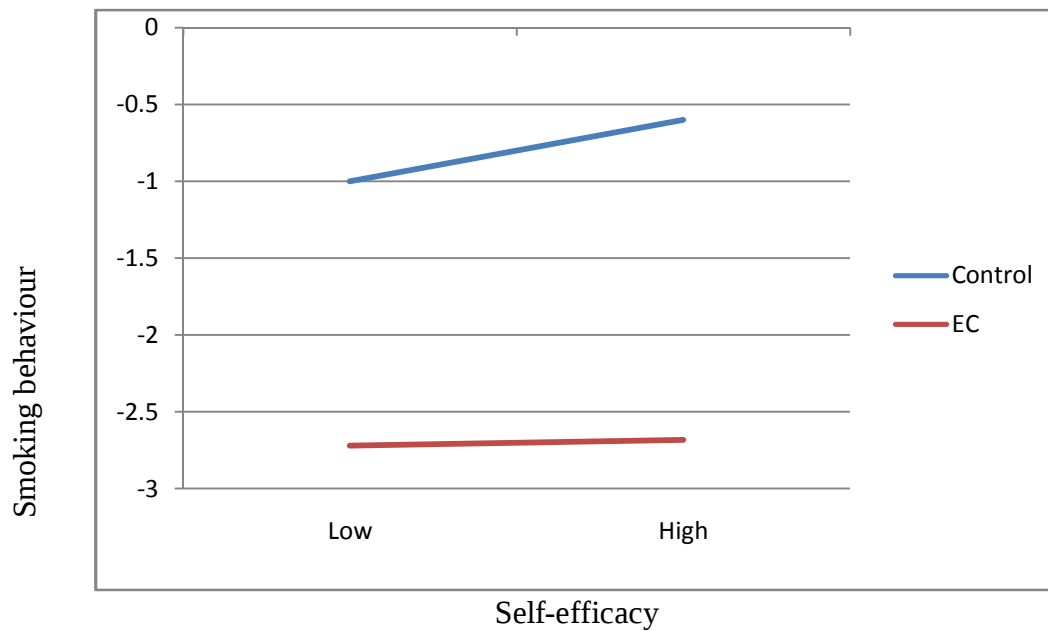


Figure 1 revealed that for high and low self-efficacy, participants in the EC group chose not to smoke more than those in the control. But more specifically, participants with high SE chose to smoke more than those with low SE but the trend was far larger for participants in the control group than those in the EC group.

Summary of the Findings

In this study, t-test was used to compare baseline scores on attitudes towards smoking between the evaluative condition group and the control group and a non significant difference in attitudes for both conditions was ascertained. Result of the study indicated that evaluative conditioning had a significant positive effect on attitudes towards behaviour change, self-identity towards behaviour change, perceived control over behaviour and intention towards behaviour change; while a negative significant effect was recorded for attitude towards smoking behaviour. The interaction term between EC and self-efficacy was also significant. Participants in EC

condition significantly chose not to smoke than those in control condition. And lastly, self-efficacy significantly moderates the relationship between EC and smoking behaviour.

CHAPTER FIVE

Discussion

The result obtained from the study revealed that Evaluative Conditioning (EC) had effect on attitude towards smoking behaviour. Specifically, participants in EC group who were presented with smoking aversive images (which is EC pairing) had significantly more negative attitude towards smoking behaviour than those in control condition. As such, their exposure to EC was a vital determinant of their negative attitude towards smoking behaviour. The first hypothesis which stated that EC will significantly affect attitude towards smoking behaviour after controlling for baseline scores, with those in the EC group having more negative attitude towards smoking than the control condition was therefore accepted. This implies that EC (pairing CS and US) affects people's attitude towards behaviour of choice. In line with this finding, Pelchat and Rozin (1982) posited that evaluative conditioning could be associated with the development of food like and dislike. They found that people disliked any food that produced negative consequences such as nausea, rashes, diarrhea and breathing problems. Also, pairing of obsessed bodies with dense foods (like meat-pie), through EC procedure changes explicit attitude towards such foods (Lascelles, et al., 2003). In their EC research, Eertmans, et al., (2001) and Capaldi (1996) found that liking for unsweetened vegetables and unfamiliar teas increases after they have been consumed sweetened on a number of occasions. In another study, taste aversions were derived from various situations, such as food poisoning, allergic reactions, over consumption and some medical treatment (Batsell & Brown, 1998).

This finding supports social judgment theory of attitude by Sherif (1963) and Sherif and Hovland, (1961) which stated that the perception and evaluation of an idea by pairing it with current attitude help us to form association between such stimuli or ideas that will lead to attitude

change. Thus, perception and evaluation of smoking aversive images in EC and pairing it with cigarette appearance led to a significant negative attitude towards smoking behaviour.

There was also a significant effect of EC on attitude towards behaviour change. The mean scores of participants in the EC group indicated a more positive attitude towards behaviour change than control. Having seen the smoking aversive images, the participants in EC group significantly developed positive attitude towards behaviour change. This denotes that EC was their driving force towards behaviour change. Also, whenever people's attitudes are negative, they become less likely to change their behaviour. But when their attitudes are positive, they are more likely to do such. Based on this, the second hypothesis which stated that EC will significantly affect attitude towards behaviour change after controlling for baseline scores, with those in the EC group having a more positive attitude towards behaviour change than the control was accepted. This change in attitude was as a result of pairing smoking aversive images (CS) and cigarette (US) in EC. Previous studies had for example changed attitudes about the homeless through the use of EC (Balas & Sweklej, 2003). In their study, instead of using national names, they paired pictures of the homeless with chocolate in order to create a change in explicit attitude. In the same way, French, et al., (2013) researched on changing attitudes towards Middle East people by pairing their pictures with positive words. The result showed that participants in conditioning group displayed an increase in implicit attitudes on the implicit attitude test towards Middle East people. Similarly, Gibson (2008) used brands Coke and Pepsi as their conditioned stimulus and these brands were paired with both positive words and positive pictures. His study showed a change in both implicit attitudes and brand choice for Coke or Pepsi.

According to the elaboration likelihood model of attitude change, pairing of motivation with characteristics of the message determines whether people will alter their attitudes (Petty and

Cacioppo, 1980). As such, participants in EC group were motivated to change their attitude positively towards smoking behaviour after being exposed to smoking aversive images (EC pairing).

Furthermore, result also revealed a significant effect of EC on self-identity towards behaviour change. The mean scores of participants in the EC group had a more positive self-identity towards behaviour change than the control group. Thus, the participants in EC group attached more value (self-efficacy) to the role of viewing smoking aversive images which fastened and as well strengthened their behaviour change. The more focused a role is to one's self-identity, the more likely the behaviour associated with that role will be performed. As a result of this, the third hypothesis which stated that EC will significantly affect self-identity towards behaviour change after controlling for baseline scores, with those in the EC group having a positive self-identity towards behaviour change than the control was accepted. They placed higher value to behaviour change because of the need to avoid the unpleasant effect of engaging in smoking when it was paired with aversive images consequences of smoking. In line with this, Hagger, et al., (2007) and Hilton (2003) posited that since self-identity reflects values, certain behaviour is likely to occur if it is related to individual's value system. Thus, at the centre of someone's behaviour is self-identity (Reid & Deaux, 1996). Thus, smoking may be an important part of one's self-identity and effort to stop it would require a deviation from the person's smoking identity by attaching values to the need to change through exposition of smoking aversive images in EC. Also, Kearnney and O'Sullivan, (2003) found that for one to change a new behaviour, there is need for the person to acquire a new self-identity that matches the expected behaviour. In this study, the participants in EC group formed new self-identity

towards behaviour change after viewing smoking aversive images. This means that EC is an architect over their self-identities towards behaviour change.

This finding can further be explained by self-control theory (Rosenbaum, 1983). According to the theory, the ability of one to monitor, inhibit and pair own emotion and thought determines whether the person will be changing his or her behaviour. Thus, monitoring of smoking aversive images in EC paradigm determines whether one's self-identity towards behaviour change will increase.

There was also a significant effect of EC on perceived control over behaviour. The mean scores revealed that participants in the EC group had higher perceived control over behaviour than the control. Having been exposed to smoking aversive images, they (EC group) had confidence on their ability to control their behaviour. Introduction of EC to them increased their perceived control over behaviour. Thus, the fourth hypothesis which stated that EC will significantly affect perceived control over behaviour after controlling for baseline score, with those in the EC group having a higher perceived control over behaviour than the control was accepted. This connotes that the participants in EC group perception of smoking aversive images enhanced their control over behaviour. In line with this finding, Ajzen (1991) observed that some behaviours are more complex than others to perform and when a person perceives a behaviour as being complex to perform, their perceived behavioural control over it will be low. But the perception of smoking aversive images by the participants in EC group heightened their perceived control over behaviour. Also, Fishbein and Ajzen, (1975) stated that any behaviour under consideration must be under volitional control.

This finding backed up the two process model theory of perceived control by Rothbaum, et al., (1982) which posits that the direct action on the environment paired with adjustment in the

environment was source of control over behaviour. Obviously, adjusting to direct action on the environment shows that one has volitional control over the environment. It is this adjustment of participants in EC group towards smoking aversive images that brought about increase in their perceived control over behaviour.

Again, there was a significant effect of EC on intention towards behaviour change. The mean scores revealed that participants in EC group had a more positive intention towards behaviour change than the control. This implies that participants in EC group, having viewed smoking aversive images, developed positive intention towards behaviour change. They became more ready to alter their behaviour immediately after the aversive stimuli projection. In a nutshell, exposition to aversive image pairing made the participants in EC group to become motivated towards behaviour change. On this basis, the fifth hypothesis which stated that EC will significantly affect intention towards behaviour change after controlling for baseline scores, with those in EC group having a more positive intention towards behaviour change than the control was accepted. This implies that EC pairing determines one's intention towards completing any giving task. In line with this, Povey, et al., (2000) found that intention to eat healthily is a successful predictor of subsequent behaviour. Sutton (1998) carried out an analysis of the association between behavioural intentions and behaviour across a series of studies and concluded that intentions generally predict between 19% and 38% behaviours. Considering this result, participants in EC group developed their intentions towards behaviour change after being exposed to smoking aversive images. Also, Yzer, et al., (2001) and Sheeran, et al., (2000) findings indicate that the intention to use condom predicts condom use behaviour; while the intention to attend for breast screening practice predicts actual health attendance behaviour.

Since intention is inner believe, this finding supports the theory of planned behaviour by Ajzen (1988; 1991) which stated that the link of beliefs with behaviour will lead to change in such behaviour. This signifies that by linking smoking aversive images with cigarette in EC, participants in EC group witnessed an abrupt positive intention towards behaviour change.

Of a great emphasis, aversive images (stimuli) are obnoxious (unpleasant) stimuli which their presence subdue any negative or undesirable behaviour. In this study, we had five aversive images (CS) that were paired with cigarette (unconditioned stimulus). The aversive images are images of mouth sore, stained fingers and teeth, cancer of the lungs, neck cancer and teeth cancer. This serves as the EC variation. For the five dimensions of attitude, EC showed a more positive significant effect on attitude towards behaviour change, self-identity towards behaviour change, perceived control over behaviour, intention towards behaviour change, but a negative one on attitude towards smoking behaviour.

The following empirical studies also supported the general effectiveness of EC on attitude change. Strick, et al., (2009) paired energy drink brand with humorous advertisement. This created an increase in explicit attitudes about the product. This implies that EC can be used to increase explicit attitudes and possibly influence brand choice in the field of advertisement. Also in EC and changing food preference study, Ebert, et al., (2009) paired candy brands with valence words. Results showed an increase in implicit attitude when candy brands were paired with positive word and for brand choice, there was no effect. Again, Grumm, et al., (2009) were successful at using EC to change attitude on self-esteem. In their experiment, they paired the word "I" with positive words and the result showed an increase for implicit attitudes, but not for explicit. Baccus, et al., (2004) paired relevant self-words with pictures of smiling faces in order to cause a change in attitudes using EC. Participants showed an increase in implicit attitudes

towards self-esteem. Hong and Chan, (2009) succeeded using EC to change both implicit and explicit attitudes toward self-esteem. In their experiment, five words about the self and five words about a general others were paired with abstract paintings and both implicit and explicit attitudes of self-esteem increased for the participants in the conditioning group.

Moreover, EC group significantly chose not to smoke than those in control. Participants in the EC group significantly chose not to smoke than those in the control condition after being exposed with smoking aversive images. This implies that having paired conditioned stimuli (smoking aversive images) with unconditioned stimuli (cigarettes) in EC, a desired response (choosing not to smoke) was established. The participants formed mental images that were associated with EC pairing. This reduced the possibility of extinction to occur. Hence, the hypothesis six which stated that participants in the EC group will significantly choose not to smoke than those in the control condition was accepted. This was as a result pairing condition stimuli (aversive images) with unconditioned stimuli (cigarettes) in EC. In line with this study, Pelchat & Rozin, (1982) found that evaluative conditioning has been associated with the development of food likes and dislikes. Humans developed a dislike for foods that are followed by negative consequences such as nausea and diarrhea. Also, it was found that taste aversions are derived from various situations, such as food poisoning, allergic reaction, over consumption and some medical treatments using EC (Batsell & Brown, 1998). Flavour-flavour conditioning appears to be an effective tool for increasing liking for isolated tastes and specific foods using EC (Eertmans, et al., 2001).

This finding gave a strong backbone to the Pavlovian Classical conditioning theory which stated that the association between conditioned stimulus and unconditioned stimulus produces a

desired response. Thus, by pairing smoking aversive images (CS) in EC with cigarette (US), a desired response (choosing not to smoke) was produced.

Finally, self-efficacy significantly moderates the relationship between EC and smoking behaviour. This connotes that participants with high self-efficacy chose to smoke more than those with low self-efficacy, but the trend was far larger for participants in the control group than those in the EC group. As a result of this, the seventh last but not the least hypothesis which stated that self-efficacy will significantly moderate the relationship between EC and smoking behaviour was accepted. Participants in EC group (having been exposed to smoking aversive images) had high self-efficacy although they chose less to smoke. In line with this, Ormrod (2006) posits that self-efficacy determines whether or not some will choose to take on a challenging task. Although the participants of this study with high self-efficacy chose to smoke than those with low self-efficacy, the issue was greater with control group than in EC group. This had contextual (cultural) explanations. For example, a recent survey conducted by the United State for Disease Control (2001), Cross River in Nigeria found that 28% of young people surveyed think that girls who smoke have more friends; while 45% of them have it that the boys who smoke have more friends. Also, 17% think that boys who smoke and 16% think that girls who smoke look more attractive. In the same vein, Odigwe (2003) observed that in Nigeria, cigarette smoking is seen by young people as something exciting and desirable and people who engage in such behaviours may have a higher self-efficacy as found in this study.

This finding supported the Bandura (1986) social cognitive theory which was of the view that the associations between internal factors like emotion, thinking, learning and likes guide our behavioural decision towards change. Thus, participants with high self-efficacy (which is an

internal factor for decision towards change) chose to smoke more than those with low self-efficacy, though it was larger for participants in control group than EC group.

Implications for the Study

These research findings had numerous implications considering certain literatures. Among the implication is that since EC (smoking aversive images pairing) was a vital determinant of the participants in EC group's negative attitude towards smoking behaviour. This implies that any undesired attitude like stealing can be put to check using EC (i.e. by pairing stealing with any obnoxious stimulus like starving).

Again, EC is a driving force for developing positive attitude towards behaviour change. This implies that people are more likely to change their behaviour when their attitude towards that is positively motivated than negative through EC. For instance, when Nigerian citizens develop a positive attitude towards their leaders, their behaviour towards government properties will automatically change for good.

Furthermore, an implication of this study was that EC affects people's self-identity which determines whether their behaviour will be altered. Kearney and O'Sullivan, (2003) posited that for one to change a new behaviour, there is need for the person to acquire a new self-identity that matches the anticipated behaviour. Considering this scenario, for one to change a new behaviour towards smoking, alcoholism or any other unpleasant ones, it is important that a suitable EC (in form of aversive image pairing) which will restore the expected behaviour should be employed. EC will also help us to form a good self-identity towards changing any undesirable behaviour of interest (like lateness to school and avoidance of bad group).

Moreover, introduction smoking aversive image pairing to EC group enhanced their perceived control over behaviour. This implies that EC strengthens our control over behaviour of

choice. Thus, for one to confidently say that he has control over drinking behaviour for instance, he must have paired this undesirable behaviour with another unpleasant stimulus like nausea drugs to subdue it.

As another implication, Ajzen and Fishbein, (1980) asserted that intention to perform a particular behaviour was the single determinant of that behaviour. In regards to this, EC group having viewed smoking aversive images developed a more positive intention towards behaviour change. This implies that EC rekindles one's intention towards behaviour change. For intention to avert lateness to school, it is EC (with the aid of setting alarm and feeding less at night) that will keep the person awake on time.

In another implication, Ormrod (2006) posits that self-efficacy is the belief in one's ability to complete a given task. From the finding of this study, self-efficacy had significant effect on smoking behaviour (having been exposed to smoking aversive images pairing). Since self-efficacy moderates EC and smoking behaviour, it will likely also have impact on checking other unacceptable behaviours like cultism and examination malpractice via EC. As a matter of facts, students with high self-efficacy used to be very active and determined in and outside the classroom than those with low self-efficacy. Bandura (1977) observed that self-efficacy can also lead people to think of a task to be harder than they actually are.

Limitations of the Study

The limitation of this study is that smoking is an anti-social behaviour. This resulted to fewness of participants in this research because many students who are smokers refused to reveal their identities. Secondly, the participants of this study were limited to under-graduates students of University of Nigeria, Nsukka. This may to an extent limit the generalization of the research

finding to the student population as they do not represent characteristic obtained in the general population of Nigerians.

Suggestions for Further Studies

I suggest that further studies should be extended to other tertiary institutions and social vices in our society like, alcoholism, stealing, examination malpractice, and the likes. This will to a greater extent expose the efficacy of evaluative conditioning towards attitude change.

Summary and Conclusion

This study examined the effect of evaluative conditioning on attitude of smokers towards smoking behaviour: The moderating role of self-efficacy. Fifty male volunteered undergraduates of University of Nigeria, Nsukka took part in the study. They were all smokers. The participants were randomly assigned into EC group and control group and administered with same scales but different treatments. Prior to evaluative condition intervention, t-test was used to compare baseline scores on attitudes towards smoking between the evaluative condition group and the control group and a non significant difference in attitudes for both conditions was ascertained. Result of the study indicated that evaluative conditioning had a significant positive effect on attitudes towards behaviour change, self-identity towards behaviour change, perceived control over behaviour and intention towards behaviour change; while a negative significant effect was recorded for attitude towards smoking behaviour. The interaction term between EC and self-efficacy was also significant. Participants in EC condition significantly chose not to smoke than those in control condition. And lastly, self-efficacy significantly moderates the relationship between EC and smoking behaviour. Again, the learning, health and attitude change theories reviewed in this study were supported by the research findings. Thus, findings were interpreted based on the theoretical and empirical literature. Thereafter, implications of the study were

discussed and the possible limitations were also stated; while suggestions were lastly made for further studies.

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APPENDICES

Appendix A (Research Scales)

Department of Psychology,
University of Nigeria,
Nsukka.

Dear respondent,

The researcher is a Masters student in Experimental Psychology of the above mentioned Department and School. The questionnaire which you are required to fill is entirely for research purpose. Please read carefully the information contained in each section and respond to them as they apply to you. You are to **circle** the number that best describes your opinion from section B to F. Be sure to **answer all items**-do not omit any. There are **no correct or incorrect responses**; we are merely interested in **your personal point of view**.

Lastly, **never circle more than one number** on a single scale. All responses should be treated as confidential.

Thanks.

Yours Sincerely,

Ezeuzo Olivermichael.

Section A (*Demography*)

Please you are required to fill, circle and tick (å) where necessary in the column most appropriate in your opinion.

1. Age

In sections B, C, D, E and F, all the questions in this survey make use of rating scales with 7 points in this manner:

Pleasant 1 2 3 4 5 6 7 Unpleasant

Extremely quite slightly neither slightly quite Extremely

Circle the level at which each statement is applied to you.

Section B (*Attitude Towards Smoking Behaviour*)

2. My quitting smoking within the next 3 months is:

Wise:	1 : 2 : 3 : 4 : 5 : 6 : 7 :	Unwise.
Good:	1 : 2 : 3 : 4 : 5 : 6 : 7 :	Bad.
Pleasant:	1 : 2 : 3 : 4 : 5 : 6 : 7 :	Unpleasant.
Harmless:	1 : 2 : 3 : 4 : 5 : 6 : 7 :	Harmful.
Enjoyable:	1 : 2 : 3 : 4 : 5 : 6 : 7 :	Unenjoyable.
Positive:	1 : 2 : 3 : 4 : 5 : 6 : 7 :	Negative.

Section C (*Attitudes Towards Behaviour Change Scale*)

3. Smoking in the next 2 weeks would be:

Pleasant : 1 : 2 : 3 : 4 : 5 : 6 : 7 : Unpleasant.

4. Smoking at all to me is: Pleasant : 1 : 2 : 3 4 : 5 : 6 : 7 : Unpleasant.
5. My smoking for at least one packet per day would be:
Pleasant : 1 : 2 : 3 4 : 5 : 6 : 7 : Unpleasant.
6. To smoke a packet of cigarette in a week for me is:
Pleasant : 1 : 2 : 3 4 : 5 : 6 : 7 : Unpleasant.

Section D (*Self-Identity Towards Behaviour Change Scale*)

7. Smoking in the next 2 weeks is an important part of who I am:
Strongly agree : 1 : 2 : 3 4 : 5 : 6 : 7 : Strongly disagree.
8. I think of myself as the type of person who would smoke in the next 2 weeks:
Strongly agree : 1 : 2 : 3 4 : 5 : 6 : 7 : Strongly disagree.
9. Quitting smoking within the next 3 months fits with how I want to live:
Strongly agree : 1 : 2 : 3 4 : 5 : 6 : 7 : Strongly disagree.
10. With the negative implications of smoking, to me quitting is the best option:
Strongly agree : 1 : 2 : 3 4 : 5 : 6 : 7 : Strongly disagree.

Section E (*Perceived Control Over Behaviour Scale*)

11. For me to smoke on regular basis is :
Very difficult: 1 : 2 : 3 4 : 5 : 6 : 7 : Very easy.

Section F (*Intention Towards Behaviour Change Scale*)

12. I intend to smoke a stick of cigarette in a week:
Extremely likely: 1 : 2 : 3 4 : 5 : 6 : 7 : Extremely unlikely.
13. I intend to smoke a stick of cigarette per day:
Extremely likely: 1 : 2 : 3 4 : 5 : 6 : 7 : Extremely unlikely.
14. I plan to quit smoking in the next months:
Extremely likely: 1 : 2 : 3 4 : 5 : 6 : 7 : Extremely unlikely.

Section G (*Self-Efficacy Scale*)

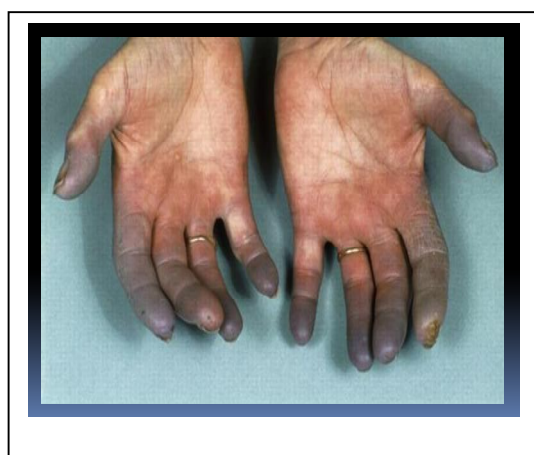
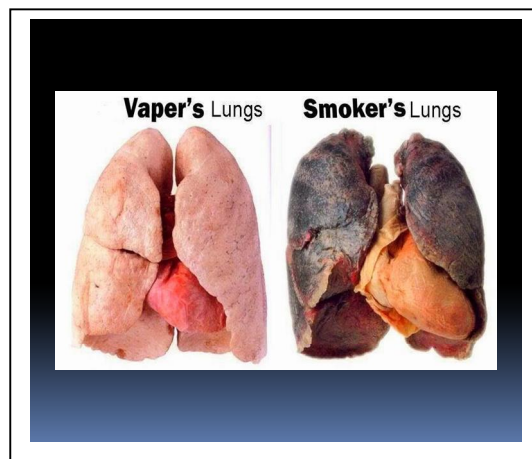
Dear respondent, please tick (â) these questions the way they are applicable to you.

S/N	Statements	Not at all	Barely true	Moderately true	Exactly true
		1	2	3	4
1	I can always manage to solve difficult problems if I try hard enough				
2	If someone opposes me, I can find means and ways to get what I want				
3	It is easy for me to stick to my aims and accomplish my goals				
4	I am confident that I could deal efficiently with unexpected events				
5	Thanks to my resourcefulness, I know how to handle unforeseen situations				
6	I can solve most problems if I invest the necessary				

	effort				
7	I can remain calm when facing difficulties because I can rely on my coping ability				
8	When I am confronted with a problem, I can usually find several solutions				
9	If I am in a bind, I can usually think of something to do				
10	No matter what comes my way, I am usually able to handle it				

Appendix B

Smoking Aversive Images



Appendix C

Reliability and validity tables for attitudes towards smoking behaviour scale

Case Processing Summary

		N	%
Cases	Valid	20	100.0
	Excluded ^a	0	.0
	Total	20	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.870	.872	6

Item Statistics

	Mean	Std. Deviation	N
ITEM1	4.9500	2.13923	20
ITEM2	4.8000	1.67332	20
ITEM3	5.3000	1.78001	20
ITEM4	5.8500	1.38697	20
ITEM5	3.8000	1.82382	20
ITEM6	4.4500	1.95946	20

Inter-Item Correlation Matrix

	ITEM1	ITEM2	ITEM3	ITEM4	ITEM5	ITEM6
ITEM1	1.000	.953	.612	.512	.200	.809
ITEM2	.953	1.000	.710	.553	.314	.831
ITEM3	.612	.710	1.000	.595	.101	.518
ITEM4	.512	.553	.595	1.000	.341	.491
ITEM5	.200	.314	.101	.341	1.000	.439
ITEM6	.809	.831	.518	.491	.439	1.000

Inter-Item Covariance Matrix

	ITEM1	ITEM2	ITEM3	ITEM4	ITEM5	ITEM6
ITEM1	4.576	3.411	2.332	1.518	.779	3.392
ITEM2	3.411	2.800	2.116	1.284	.958	2.726

ITEM3	2.332	2.116	3.168	1.468	.326	1.805
ITEM4	1.518	1.284	1.468	1.924	.863	1.334
ITEM5	.779	.958	.326	.863	3.326	1.568
ITEM6	3.392	2.726	1.805	1.334	1.568	3.839

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	4.858	3.800	5.850	2.050	1.539	.495	6
Item Variances	3.272	1.924	4.576	2.653	2.379	.816	6

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
ITEM1	24.2000	43.958	.806	.937	.822
ITEM2	24.3500	47.608	.909	.953	.808
ITEM3	23.8500	52.134	.626	.675	.855
ITEM4	23.3000	56.537	.620	.466	.858
ITEM5	25.3500	59.082	.321	.450	.905
ITEM6	24.7000	45.905	.815	.744	.820

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
29.1500	71.397	8.44970	6

Appendix D

Reliability and validity tables for attitude towards behaviour change scale

Case Processing Summary

		N	%
Cases	Valid	20	100.0
	Excluded ^a	0	.0
	Total	20	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.828	.822	4

Item Statistics

	Mean	Std. Deviation	N
ITEM1	4.0500	2.32775	20
ITEM2	3.0000	1.97351	20
ITEM3	2.5500	1.66938	20
ITEM4	3.6500	2.03328	20

Inter-Item Correlation Matrix

	ITEM1	ITEM2	ITEM3	ITEM4
ITEM1	1.000	.756	.372	.716
ITEM2	.756	1.000	.607	.616
ITEM3	.372	.607	1.000	.153
ITEM4	.716	.616	.153	1.000

Inter-Item Covariance Matrix

	ITEM1	ITEM2	ITEM3	ITEM4
ITEM1	5.418	3.474	1.445	3.387
ITEM2	3.474	3.895	2.000	2.474
ITEM3	1.445	2.000	2.787	.518
ITEM4	3.387	2.474	.518	4.134

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	3.313	2.550	4.050	1.500	1.588	.446	4
Item Variances	4.059	2.787	5.418	2.632	1.944	1.166	4

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
ITEM1	9.2000	20.800	.782	.672	.720
ITEM2	10.2500	23.039	.839	.725	.697
ITEM3	10.7000	32.116	.419	.448	.872
ITEM4	9.6000	25.937	.616	.573	.800

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
13.2500	42.829	6.54438	4

Appendix E

Reliability and validity tables for self-identity towards behaviour change scale

Case Processing Summary

		N	%
Cases	Valid	20	100.0
	Excluded ^a	0	.0
	Total	20	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.715	.719	4

Item Statistics

	Mean	Std. Deviation	N
ITEM1	2.5000	1.82093	20
ITEM2	4.2500	2.02290	20
ITEM3	3.8000	1.93581	20
ITEM4	3.0500	1.66938	20

Inter-Item Correlation Matrix

	ITEM1	ITEM2	ITEM3	ITEM4
ITEM1	1.000	.636	.373	.459
ITEM2	.636	1.000	.215	.199
ITEM3	.373	.215	1.000	.459
ITEM4	.459	.199	.459	1.000

Inter-Item Covariance Matrix

	ITEM1	ITEM2	ITEM3	ITEM4
ITEM1	3.316	2.342	1.316	1.395
ITEM2	2.342	4.092	.842	.671
ITEM3	1.316	.842	3.747	1.484
ITEM4	1.395	.671	1.484	2.787

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	3.400	2.500	4.250	1.750	1.700	.605	4
Item Variances	3.486	2.787	4.092	1.305	1.468	.318	4

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
ITEM1	11.1000	16.621	.681	.530	.541
ITEM2	9.3500	18.239	.446	.415	.690
ITEM3	9.8000	19.011	.432	.245	.696
ITEM4	10.5500	20.155	.474	.319	.670

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
13.6000	30.042	5.48107	4

Appendix F

Reliability and validity tables for intention towards behaviour change scale

Case Processing Summary

		N	%
Cases	Valid	20	100.0
	Excluded ^a	0	.0
	Total	20	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.841	.842	3

Item Statistics

	Mean	Std. Deviation	N
ITEM1	3.7500	2.26820	20
ITEM2	3.3500	2.10950	20
ITEM3	3.8000	2.16673	20

Inter-Item Correlation Matrix

	ITEM1	ITEM2	ITEM3
ITEM1	1.000	.580	.600
ITEM2	.580	1.000	.742
ITEM3	.600	.742	1.000

Inter-Item Covariance Matrix

	ITEM1	ITEM2	ITEM3
ITEM1	5.145	2.776	2.947
ITEM2	2.776	4.450	3.389
ITEM3	2.947	3.389	4.695

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	3.633	3.350	3.800	.450	1.134	.061	3
Item Variances	4.763	4.450	5.145	.695	1.156	.124	3

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
ITEM1	7.1500	15.924	.632	.400	.851
ITEM2	7.5500	15.734	.737	.579	.749
ITEM3	7.1000	15.147	.751	.593	.733

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
10.9000	32.516	5.70226	3

Appendix G

Reliability and validity tables for self-efficacy scale

Case Processing Summary

		N	%
Cases	Valid	20	100.0
	Excluded ^a	0	.0
	Total	20	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.712	.723	10

Item Statistics

	Mean	Std. Deviation	N
ITEM1	3.1000	.85224	20
ITEM2	3.5500	.75915	20
ITEM3	3.7500	.44426	20
ITEM4	3.6000	.59824	20
ITEM5	3.5500	.68633	20
ITEM6	3.4500	.51042	20
ITEM7	3.4000	.68056	20
ITEM8	3.4500	.82558	20
ITEM9	3.5500	.68633	20
ITEM10	3.8500	.36635	20

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	3.525	3.100	3.850	.750	1.242	.041	10
Item Variances	.434	.134	.726	.592	5.412	.039	10

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item- Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
ITEM1	32.1500	10.239	.207	.491	.728
ITEM2	31.7000	9.063	.537	.792	.658
ITEM3	31.5000	11.000	.304	.496	.701
ITEM4	31.6500	11.818	-.020	.627	.746
ITEM5	31.7000	8.747	.708	.842	.627
ITEM6	31.8000	10.905	.275	.498	.704
ITEM7	31.8500	10.029	.371	.510	.690
ITEM8	31.8000	8.800	.533	.693	.657
ITEM9	31.7000	9.905	.397	.575	.686
ITEM10	31.4000	10.568	.583	.818	.677

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
35.2500	12.092	3.47737	10

Appendix H
Participants Demographic Data
AGE

	Frequency	Percent	Minimum	Maximum	Mean age
Valid 18.00	6	12.0	18	30	23.7000
19.00	4	8.0			
20.00	2	4.0			
21.00	5	10.0			
22.00	4	8.0			
23.00	5	10.0			
24.00	1	2.0			
25.00	2	4.0			
26.00	4	8.0			
27.00	7	14.0			
28.00	6	12.0			
29.00	2	4.0			
30.00	2	4.0			
Total	50	100.0			

APPENDIX I

Analysis Output for Hypotheses Testing

T-test of baseline scores (pre-test) for Evaluative Conditioning (EC) group and control conditioning on Attitude Towards Smoking Behaviour (ATSB), Attitude Towards Behaviour Change (ATBC), Self-identity Towards Behaviour Change (SITBC), Perceived Control Over Behaviour (PCOB) and Intention Towards Behaviour Change (ITBC).

T-Test

Group Statistics

EC		N	Mean	Std. Deviation	Std. Error Mean
ATSBpre	Control	25	25.8000	4.02078	.80416
	EC group	25	26.8000	3.95811	.79162

Independent Samples Test

		Levene's Test for Equality of Variances	
		F	Sig.
ATSBpre	Equal variance Assumed	.018	.895
	Equal variance not assumed		

Independent Samples Test

		t-test Equality of Means			
		t	df	Sig. (2-tailed)	Mean Difference
ATSBpre	Equal variance Assumed	-.886	48	.380	-1.00000
	Equal variance not assumed	-.886	47.988	.380	-1.00000

Independent Samples Test

		t-test for Equality of Mean		
		Std. Error Difference	95% Confidence Interval of the Difference	
			Lower	Upper
ATSBpre	Equal variance Assumed	1.12842	-3.26884	1.26884
	Equal variance not assumed	1.12842	-3.26886	1.26886

T-Test**Group Statistics**

EC		N	Mean	Std. Deviation	Std. Error Mean
ATBCpre	Control	25	17.0000	4.68152	.93630
	EC group	25	16.3600	3.45060	.69012

Independent Samples Test

		Levene's Test for Equality of Variances	
		F	Sig.
ATBCpre	Equal variance Assumed	1.517	.224
	Equal variance not assumed		

Independent Samples Test

		t-test Equality of Means			
		t	df	Sig. (2-tailed)	Mean Difference
ATBCpre	Equal variance Assumed	.550	48	.585	.64000
	Equal variance not assumed	.550	44.134	.585	.64000

Independent Samples Test

		t-test for Equality of Mean		
		Std. Error Difference	95% Confidence Interval of the Difference	
			Lower	Upper
ATSBpre	Equal variance Assumed	1.16316	-1.69868	2.97868
	Equal variance not assumed	1.16316	-1.70399	2.98399

T-Test**Group Statistics**

EC		N	Mean	Std. Deviation	Std. Error Mean
SITBCpre	Control	25	17.5200	3.51331	.70266
	EC group	25	16.4400	3.47707	.69541

Independent Samples Test

		Levene's Test for Equality of Variances	
		F	Sig.
SITBCpre	Equal variance Assumed	.006	.941
	Equal variance not assumed		

Independent Samples Test

		t-test Equality of Means			
		t	df	Sig. (2-tailed)	Mean Difference
SITBCpre	Equal variance Assumed	1.092	48	.280	1.08000
	Equal variance not assumed	1.092	47.995	.280	1.08000

Independent Samples Test

		t-test for Equality of Mean		
		Std. Error Difference	95% Confidence Interval of the Difference	
			Lower	Upper
SITBCpre	Equal variance Assumed	.98860	-.90772	3.06772
	Equal variance not assumed	.98860	-.90772	3.06772

T-Test**Group Statistics**

EC	N	Mean	Std. Deviation	Std. Error Mean
PCOBpre Control	25	4.4000	1.50000	.30000
EC group	25	3.7200	1.33915	.26783

Independent Samples Test

		Levene's Test for Equality of Variances	
		F	Sig.
PCOBpre	Equal variance Assumed	.400	.530
	Equal variance not assumed		

Independent Samples Test

		t-test Equality of Means			
		t	df	Sig. (2-tailed)	Mean Difference
PCOBpre	Equal variance Assumed	1.691	48	.097	.688000
	Equal variance not assumed	1.691	47.395	.097	.68000

Independent Samples Test

		t-test for Equality of Mean		
		Std. Error Difference	95% Confidence Interval of the Difference	
			Lower	Upper
PCOBpre	Equal variance Assumed	.40216	-.12860	1.48860
	Equal variance not assumed	.40216	-.12887	1.48887

T-Test**Group Statistics**

EC		N	Mean	Std. Deviation	Std. Error Mean
ITBCpre	Control	25	12.0800	3.54636	.70927
	EC group	25	12.1200	3.15331	.63066

Independent Samples Test

		Levene's Test for Equality of Variances	
		F	Sig
ITBCpre	Equal variance Assumed	.348	.558
	Equal variance not assumed		

Independent Samples Test

		t-test Equality of Means			
		t	df	Sig. (2-tailed)	Mean Difference
ITBCpre	Equal variance Assumed	-.042	48	.967	-.04000
	Equal variance not assumed	-.042	47.353	.967	-.04000

Independent Samples Test

		t-test for Equality of Mean		
		Std. Error Difference	95% Confidence Interval of the Difference	
			Lower	Upper
ITBCpre	Equal variance Assumed	.94910	-1.94830	1.86830
	Equal variance not assumed	.94910	-1.94898	1.85898

MANCOVA Table showing the effect of Evaluative Conditioning on attitude dimensions: Attitude towards smoking behaviour, Attitude towards behaviour change, Self-identity towards behaviour change, Perceived control over behaviour and Intention towards behaviour change.

General Linear Model

Between-Subjects Factors

		Value Label	N
EC	1.00	Control	25
	2.00	EC group	25

Descriptive Statistics

EC		Mean	Std. Deviation	N
ATSBpost	Control	27.6000	6.10328	25
	EC group	34.7600	3.19218	25
	Total	31.1800	6.02610	50
ATBCpost	Control	15.480	3.89572	25
	EC group	23.6400	2.92803	25
	Total	19.5600	5.34965	50
SITBCpost	Control	15.8000	4.04145	25
	EC group	23.7200	2.90861	25
	Total	19.7600	5.30521	50
PCOBpost	Control	4.0400	1.01980	25
	EC group	5.9600	1.30639	25
	Total	5.0000	1.51186	50
ITBCpost	Control	11.2400	2.80297	25
	EC group	18.9600	1.74356	25
	Total	15.1000	4.53220	50