TOBACCO DEPENDENCE AMONG MIZO ADULTS: A PSYCHOLOGICAL ANALYSIS

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Certificate

This is to certify that the present piece of Thesis titled, "Tobacco Dependence Among Mizo Adults: A Psychological Analysis" is the bonafide research conducted by Ms. C. Lalfakzuali under my supervision. She worked methodologically for her dissertation being submitted for the Doctor of Philosophy in Psychology under the Mizoram University.

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DECLARATION

I, C. Lalfakzuali, hereby declare that the subject matter of this Thesis is the record of work done by me, that the contents of this Thesis did not form basis for the award of any previous degree to me or to the best of my knowledge to anybody else, and that the Thesis has not been submitted by me for any research degree in any other University or Institute.

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This thesis is dedicated to the loving memory of my dear brother, Lalbiaksanga Chhakchhuak. You continue to be an inspiration.

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Chapter- I
INTRODUCTION

*"**Tobacco***" belongs to the family of plants called '*Solanaceae'* or '*the night shade family'*. Modern commercial varieties of tobaccos have descended directly from *Nicotinetabacum*(Arora, 2003). Various theories are related to the origin of the word tobacco, which is thought to be derived from the Arabic word *'Tabaq'* meaning '*euphoria producing herb'*. According to another theory, the word tobacco is derived from a Spanish word '*Tobaca'* which is a Y-shaped instrument used by early American Indians to inhale snuff. Tobacco can be classified in large variety of ways; the diversity of **types of tobacco** in India can be categorized mainly into two ways: - '*Smoked forms of tobacco'* and *'Smokeless forms of tobacco'*. Smoked forms include cigarettes, cigars, local made cigarette, hookah etc. Smokeless forms of tobacco includes zarda, khaini, paan masala, paan with tobacco, tobacco water etc. (John, 2006).

Early Beginnings: The use of tobacco (*Nicotine tobaccum*) has been traced to early American civilizations, where it played a prominent role in religious rites and ceremonies. Among the ancient Maya, tobacco smoke was used as "solar incense" to bring rain during the dry season. The Aztecs employed tobacco (*Nicotine rustica*) as a power that was used in ceremonial rites as well as chewed as a euphoric agent with lime (Schultes, 1978). In 1492, Columbus and his crew observed natives lighting rolls of dried leaves, which they called *tobacos* (cigars), and "swallowing" the smoke (Schultes, 1978). Twenty years later, Juan Ponce de Leon brought tobacco back to Portugal, where it soon was grown on Portuguese soil. Sir Walter Raleigh introduced smoking to England in 1565, and the English, too, successfully grew tobacco (Vogt, 1982). The growth of world trade led to the spread of tobacco to every corner of the globe. The popular "weed" was not without its detractors. James I of England published a *counterblast to tobacco* in 1604, and he arranged a public debate on the effects of tobacco in 1605. Pope Urban III condemned tobacco use in 1642, threatening excommunication of offenders. In Russia, a decree in 1634 punished tobacco users by nose slitting, castration, flogging, and banishment. These harsh measures were abolished by Peter the Great, who took to smoking a pipe in an effort to open a window to the West. It is believed that the smoking of cigarettes first occurred in Mexico, where chopped tobacco was wrapped in corn husks (Lancker, 1977).

Tobacco was introduced into India by Portuguese traders during AD 1600. Its use and production proliferated to such a great extent that today India is the second largest producer of tobacco in the world. Soon after its introduction, it became a valuable commodity of barter trade in India. Trade expanded and tobacco spread rapidly along the Portuguese trade routes in the East, via Africa to India, Malaysia, Japan and China. During this period, the habit of smoking spread across several South Asian countries. Virtually every household in the Portuguese colonies took up the newly introduced habits of smoking and chewing tobacco (Shangvi, 1992). Tobacco was originally introduced as a product to be smoked in India, it gradually began to be used in several other forms, it became an important additive to paan (betel quid).

The 19th and 20th Century: The most popular forms of tobacco used in the United States in the past were chewing tobacco and dipping snuff, as evidenced by spittoons in homes and public places. In the late 1800s, cigarette smoking grew in popularity. Cigarettes were first mass-produced in Durham, North Carolina, in 1884. Washington Duke used a newly invented cigarette machine to produce some 120,000 cigarettes per day, thus ushering in the era of cheap, abundant tobacco products for smoking, and setting the stage for 20thcentury epidemics of lung cancer, emphysema, and coronary heart disease (Vogt, 1982).In India, tobacco production increased within the first 20 years of Independence. From 1951 to 2001, there was an increase in the production by 130%, in excise revenue by 31,614%, in export revenue by 5823% and in consumption by 92%. Of the 200 million tobacco consumers in India, 13% consume it in the form of cigarettes, while 54% consume it in the form of beedi and the rest in raw/ gutka forms (IIFT, 2002).

The "Cigarette Century": In 1900, the total consumption of cigarettes in the United States was 2.5 billion (U.S. Department of Health and Human Services, 1989b). Major advances in agriculture, manufacturing, and marketing, the Great Depression, two world wars, and changing cultural norms led to a marked increase in consumption. Total consumption increased from 2.5 billion in 1900 to 631.5 billion in 1980 (U.S. Department of Health and Human Services, 1989b). Cigarette consumption peaked in 1981 (640 billion) but declined in 1987 to an estimated 574 billion, the equivalent of more than 6 trillion doses of nicotine (Jones, 1987). An

estimated 430 billion cigarettes were consumed in 2000 (U.S. Department of Agriculture, 2001).

Early Warning Signs: The decline in per capita cigarette consumption during the latter part of the 20th century was due in large part to growing concerns about the adverse health consequences of cigarette smoking and the growth of the anti-smoking movement. Early case reports and case studies called attention to the likely role of smoking and chewing tobacco as a cause of cancer (Samet, 2001). Key initial observations were made in epidemiological studies carried out to examine changing patterns of disease in the 20th century, particularly the dramatic rise in lung cancer, coronary heart disease, and chronic obstructive lung disease (Samet, 2001). Dr. Luther Terry, who served as Surgeon General of the U.S. Public Health Service from 1961 to 1965, noted that the landmark 1964 Surgeon General's Advisory Committee Report, *Smoking and Health*, was the culmination of growing scientific concern over a period of more than 25 years (Terry, 1983). The report also recognized the "habitual" nature of tobacco use but stopped short of recognizing tobacco use as an addiction.

In India, soon after its introduction towards the end of Akbar's reign, tobacco became a popular product. However, Jahangir—the son of Akbar, like his contemporaries, King James I of England and Shah Abbas I of Persia, believed tobacco to be a noxious drug and forbade its use. It is noteworthy that within twelve years of its introduction in India, Jahangir noticed the ill effects of tobacco and took measures to prohibit its use. In 1617, Jahangir passed orders against tobacco smoking and he referred to the efforts undertaken by Shah Abbas of Iran to prohibit the practice of smoking (Chattopadhayya, 1995). Mahatma Gandhi, who led the movement for Indian independence from British rule, repeatedly spoke and wrote against the use of tobacco. He believed it to be both harmful to health and a waste of money. India attained independence in the year 1947, and the Constitution of India came into effect on 26 January 1950. A draft of the constitution was published in February 1948. According to Article 47 of the Constitution: 'State shall endeavour to bring about prohibition of the consumption, except for medicinal purposes, of intoxicating drinks and drugs which are injurious to health.' In 1948, Sardar Bhopinder Singh Mann, who was a member of Parliament and part of the drafting

committee, proposed putting the word ‘tobacco’ between the words ‘drinks’ and ‘drugs’ in this clause. He stated: ‘I am aware that in moving this amendment, I would be incurring the displeasure of the influential members of this House.’ He also said: ‘I have no doubt that tobacco is an intoxicant and is more harmful to health than liquor ... Take the villagers; they get liquor only off-and-on, but they smoke tobacco day and night ... As far as the economic aspect is concerned, I can assure you that much greater loss is incurred on account of tobacco than by liquor.’ The Constituent Assembly rejected his motion. The Leading Preventable Cause of Death According to the Centers for Disease Control and Prevention (2002), tobacco causes approximately 440,000 deaths in the United States each year, making it the leading preventable cause of death. Cigarette smoking accounts for about30% of all cancer deaths (87% of lung cancers) and is a major cause of heart disease, cerebrovascular disease, chronic bronchitis, and emphysema (American Cancer Society [ACS], 2003).

Nicotine Addiction*:* It was not until 1988 that the addictive nature of tobacco was formally recognized. Major conclusions from the 1988 Surgeon General’s report (U.S. Department of Health and Human Services, 1988) were as follows: (1) Cigarettes and other forms of tobacco are addicting; (2) nicotine is the drug in tobacco that causes addiction; and (3) the pharmacological and behavioral processes that determine tobacco addiction are similar to those that determine addiction to drugs such as heroin and cocaine.When a pharmaceutical preparation or naturally occurring substance is used primarily to bring about a change in some existing process or state (physiological, psychological or biochemical) it can be called a ‘*drug*’. Among the compounds found in tobacco, *‘Nicotine’* is the addictive substance and it falls under the drug categorized as ‘*stimulant’*, stimulant drugs excite or speed up the central nervous system. The 1988 report of the United States Surgeon General, subtitled *Nicotine addiction,* concluded that: ‘The pharmacological and behavioral processes that determine tobacco addiction are similar to those that determine addiction to drugs such as heroin and cocaine’ *(*US Department of Health and Human Services, 1988*).*

The nicotine molecule is shaped like acetycholine (Benowitz, 2001). Nicotine activates certain cholinergic receptors in the brain that would ordinarily be activated by acetylcholine. By activating cholinergic receptors, nicotine enhances the release of neurotransmitters and hormones, including acetylcholine, norepinephrine,

dopamine, vasopressin, serotonin, and beta-endorphin. The cholinergic activation leads to behavioral arousal and sympathetic neural activation. The release of specific neurotransmitters has been specifically linked to particular reinforcing effects of nicotine. Enhanced release of dopamine, norepinephrine, and serotonin may be associated with pleasure, mood elavation, and appetite suppression. Release of acetycholine may be associated with improved performance on behavioral tasks and improvement of memory and the release of beta-endorphin may be associated with the reduction of anxiety and tension (Benowitz, 2001).

Diagnosis of tobacco dependency: According to the fourth edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV; American Psychiatric Association, 1994), nicotine dependence is considered to be a substance-related disorder. The key features of substance dependence are a cluster of cognitive, behavioral, and physiological symptoms indicating that the individual continues use of the substance despite significant substance-related problems. There is a pattern of repeated self administration that usually results in tolerance, withdrawal, and compulsive drug-taking behavior (American Psychiatric Association, 2000). The following are DSM-IV-TR criteria for diagnosis of nicotine dependence (APA, 2000). The user must demonstrate at least three of the following criteria occurring at the same time during a 12-month period: 1) Tolerance; signs of tolerance are a need for a markedly increased amount of nicotine to produce the desired effect or a diminished effect with continued use of the same amount of nicotine (2) Withdrawal, as manifested by either the characteristic nicotine withdrawal syndrome, or nicotine (or a closely related substance) is taken to relieve or avoid withdrawal symptoms (3) Nicotine is used in larger amounts or over a longer period than intended (4) The user has a persistent desire or makes unsuccessful attempts to cut down on tobacco (5) A great deal of time is spent in obtaining or using the substance (e.g., chain smoking) (6) Important social, occupational, or recreational activities are reduced because of tobacco use (7) Use of the substance continues despite recurrent physical or psychological problems caused or exacerbated by tobacco: for example, continuing to smoke despite diagnoses such as hypertension, heart disease, cancer, bronchitis, and chronic obstructive lung disease. Information needed to make the diagnosis can be obtained through interview and questionnaire, and can readily be collected along with other medical history data**.** Once a diagnosis of nicotine dependence is made, it is

useful to characterize the degree to which the patient is physically dependent on tobacco. Tests of psychological and physiological dependence, in the form of a questionnaire for tobacco users include the Fagerström Test for Nicotine Dependence (which evolved from the earlier Fagerström Tolerance Questionnaire4), the Cigarette Dependence Scales, the Nicotine Dependence Syndrome Scale, the Wisconsin Inventory of Smoking Dependence Motives that assess whether a tobacco user satisfies the criteria for drug dependence in the Diagnostic and Statistical Manual of Mental Disorders of the American Psychiatric Association, 2000 (Piper et al., 2008).

Henningfield (1986) compared tobacco dependence to other forms of drug dependence and concluded that there are more similarities than differences. He noted that (1) tobacco dependence, like other forms of drug dependence, is a complex process, involving interactions between drug and nondrug factors; (2) tobacco dependence is an orderly and lawful process governed by the same factors that control other forms of drug self-administration; (3) tobacco use, like other forms of drug use, is sensitive to dose manipulation; (4) development of tolerance (diminished response to repeated doses of a drug or the requirement for increasing the dose to have the same effect) and physiological dependence (termination of nicotine followed by a syndrome of withdrawal phenomena) when nicotine is repeatedly administered is similar to the development of tolerance and dependence of other drugs of abuse; and (5) tobacco, like many other substances of abuse, produces effects often considered a utility or benefit to the user (e.g., relief of anxiety or stress, avoidance of weight gain, alteration in mood).

In persons with nicotine dependence, as with other forms of drug dependence, behavior is highly controlled or compulsive, the chemical's mood-altering or psychoactive effects are central to the drug's activity, and the drug itself has the ability to reinforce behavior (DHHS, 1988). When smokers and other tobacco users, adolescents as well as adults, stop, they may experience nicotine withdrawal as defined by DSM-IV-TR (American Psychiatric Association, 2000). About 50% of adults who attempt to stop smoking will meet DSM-IV criteria for nicotine dependence (American Psychiatric Association,1996), and young smokers show signs of addiction within several months of taking up the habit (DiFranza et al., 2002). Associated features include craving, a desire for sweets, and impaired performance on

tasks requiring vigilance (American Psychiatric Association, 2000). Depression and difficulty sleeping are not uncommon. Associated laboratory findings include a slowing on electroencephalograph, decreases in catecholamine and cortisol levels, rapid eye movement (REM) changes, impairment on neuropsychological testing, and decreased metabolic rate (American Psychiatric Association, 2000). Nicotine withdrawal also may be associated with a dry or productive cough, decreased heart rate, increased appetite or weight gain, and a dampened orthostatic response (American Psychiatric Association, 2000). Cigarette smokers often smoke more than they intend to, have difficulty quitting or simply cutting down, spend a great deal of time procuring cigarettes and smoking them, persist in smoking despite known risk and/or current illness, and readily develop tolerance, enabling them to smoke a larger number of cigarettes per day than they did when they first started smoking. Research on the epidemiology of drug dependence has shown that of all people who initiate tobacco use, almost one-third (32%) become addicted. This is a much higher addiction capture rate than for users of heroin (23%), cocaine (17%), alcohol (15%) or cannabis (9%) (Anthony et al., 1994, Upadhyaya, 2002). Tobacco's status as a legal, and until recently, a socially acceptable product, with a long history of high-profile marketing and promotion, has contributed to much higher levels of tobacco than illicit drug dependence in the community.

The fact that most smokers who quit smoking in the past did soon their own, without formal treatment, seems to be somewhat at odds with the popular notion of addiction. However, it is important to note that most former heroin users also gave up heroin without formal treatment (Johnson, 1977). When smokers quit smoking, there is a fairly high probability that they will return to smoking (relapse). Smokers often quit many times before they succeed in remaining abstinent. Relapse is most likely to occur soon after quitting. Studies of quit-smoking programs show that most smokers relapse within about 3 months (Hunt &Bespalec, 1974). Although ex-smokers are less likely to relapse after they have been abstinent for 3 months, the potential for relapse remains present for many years (Ockene, Hymowitz, Lagus, &Shaten, 1991). Although the similarities between tobacco or nicotine dependence and other forms of drug dependence are noteworthy, there are features of tobacco use that make it unique. In contrast to many other drugs of abuse, tobacco products are legal and readily available. When used as intended, tobacco products lead to disease and death.

Unlike alcohol, a legal drug that can be consumed socially and in moderation without ill effects, all levels of tobacco use are harmful (U.S. Department of Health and Human Services, 1988). Large sums of money are spent each year to advertise and market tobacco products, particularly cigarettes. So pervasive is the positive imagery associated with cigarette smoking that it is almost impossible to distinguish between the reinforcing qualities of cigarettes that derive from past conditioning and learning and those that derive solely from nicotine.

In India, tobacco is used in a wide variety of ways: smoking, chewing, applying, sucking, gargling, etc. For each type of tobacco use, a wide range of tobacco products may be available. Some of these products are industrially manufactured on a large scale, some locally on a small scale, some may be prepared by a vendor and some may be prepared by the user himself or herself. Newer imperishable forms of tobacco with areca nut have become very popular and the indutry has grown phenomenally within a few decades.

***Classification of Types of Tobacco User (Smoker and Smokeless tobacco user) and Non-user*:** Tobacco may be used in multiple ways, but '*tobacco users'* are classified mainly into '*Smokers*' and '*Smokeless tobaccousers'*. '*Smokers*' are those who use smoked forms of tobacco. According to the classification by World Health Organization (1983), a smoker can be categorized as: - '*Current smokers',* who smoke at the time of the study and had smoked more than 100 cigarettes in their lifetime. '*Current smoking'* includes both daily and non-daily or occasional smoking. '*Daily smokers'* are anyone who at the time of the study smokes at least one cigarette or some kind of tobacco product every day. '*Occasional smokers'* are anyone who smokes, but less than once a day. '*Non- Users'* are anyone who at the time of the study doesn't use tobacco at all. Non-Smokers include '*Ex-smokers'* who have smoked daily for at least six months but who did not smoke at the time of the study and '*Other non-smokers'* include both those who have never smoked and those who have smoked too little (in terms of frequency and duration) to be regarded as ex-smokers. '*Smokeless tobaccousers'* are those who use smokeless forms of tobacco. Smokeless tobacco users are categorized in the same manner as smokers, wherein '*Current users'*include both daily and non-daily or occasional tobacco user. '*Daily users'* are anyone who at the time of the study uses smokeless tobacco at least once a

day. '*Occasional users'* are anyone who uses smokeless tobacco, but less than once a day. Likewise, '*Non- Users'* are anyone who at the time of the study doesn't use tobacco at all. '*Non-Users'* include '*Ex-users'* who have used smokeless tobacco daily for at least six months but who did not use it at the time of the study and '*Other non-users'* which include both those who have never used smokeless tobacco and those who have used too little (in terms of frequency and duration) to be regarded as ex-users.

Clinical features: Under normal circumstances, cigarette smoking and other forms of tobacco use do not cause obvious states of intoxication, nor does their chronic use lead to organic brain damage, although acute effects of nicotine may affect vigilance and memory (U.S. Department of Health and Human Services, 1988). Overdose typically is not a problem, and acute effects of nicotine on health have received less attention than chronic effects in the medical literature.A number of poisonings and deaths from ingestion of nicotine, primarily involving nicotine-containing pesticides, have been reported, and acute intoxication has been observed in children after swallowing tobacco materials (U.S. Department of Health and Human Services, 1988). The lethal oral dose of nicotine in adults has been estimated at 40–60 mg (U.S. Department of Health and Human Services, 1988). Nicotine intoxication produces nausea, vomiting, abdominal pain, diarrhea, headaches, sweating, and pallor. More severe intoxication results in dizziness, weakness, and confusion, progressing to convulsions, hypotension and coma. Death is usually due to paralysis of respiratory muscles and/or central respiratory control (U.S. Department of Health and Human Services, 1988). As noted previously, the chronic effects of cigarette smoking take a massive toll. The role of cigarette smoking in the pathogenesis of coronary heart disease, lung and other cancers, and chronic obstructive lung disease, as well as many other forms of illness, has been dramatically documented in a series of reports by U.S. surgeons general dating back to 1964 (U.S. Public Health Service, 1964). Cigarette smoking has been cited as the chief avoidable cause of death and morbdity in our society, and the number one public health problem of our time (U.S. Department of Health and Human Services, 1989b). Direct effects of nicotine on heart rate, cerebral blood flow, blood pressure, platelet aggregation, and fibrinogen are just a few of the mechanisms by which nicotine and cigarette smoking exert acute influences on health and well-being (Black, 1990).

Evidence of the harmful effects of cigarette smoking also may be observed in smokers in whom frank disease has not yet developed. Shortness of breath, cough, excessive phlegm, and nasal catarrh are common symptoms that readily subside when smokers stop smoking (U.S. Department of Health, Education, and Welfare, 1979). Smokers often report a dulling of the senses of taste and smell, and smokers, as well as their family members, generally experience more colds and illness than nonsmokers (U.S. Department of Health, Education, and Welfare, 1979). Tobacco smoke and products may interact with other drugs that patients are taking (Pharmacists' "Helping Smokers Quit" Program, 1986). Drugs that show the most significant interactions with tobacco smoke include oral contraceptives, theophylline, propranolol, and other antianginal drugs. Drugs with moderately significant clinical interactions with smoking include propoxyphene, pentazocine, phenylbutazone, phenothiazine, tricyclic antidepressants, benzodiazepines, amobarbital, heparin, furosemide, and vitamins (Pharmacists' "Helping Smokers Quit" Program, 1986). Bansil, Hymowitz, and Keller (1989) showed that outpatients with schizophrenia who smoked cigarettes required significantly more neuroleptic medication to control psychiatric symptoms than comparable nonsmokers, despite the fact that the patients were identical with respect to initial severity of illness. Multivariate analyses showed that the difference between the groups was not due to age, weight, sex, alcohol consumption, or tea–coffee intake. In view of the side-effects profile of many drugs used in psychiatry, and the fact that the prevalence of tardive dyskinesia may be higher in mentally ill patients who smoke than in patients who do not smoke (Yassa, Lal, Korpassy, & Ally, 1987), it is important to achieve clinical effectiveness with as low a dose as possible. Cigarette smoking compromises this important goal. Cigarette smoking, other forms of tobacco use and environmentental tobacco smoke (ETS) adversely affect the health and vitality of the young (American Academy of Pediatrics, 2001). Tobacco use by pregnant women may lead to low birthweight, preterm delivery, birth defects, and death of the fetus, and exposure to ETS following birth increases the risk of SIDS, respiratory distress, ear infections, and asthma (American Academy of Pediatrics, 2001). The initiation of cigarette smoking predisposes youth to a lifetime of addiction and tobacco-related disease (Samet, 2001). The evidence clearly indicates that smokers and other tobacco products users benefit in many ways when they stop (U.S. Department of Health and Human Services, 1990). Carbon monoxide is eliminated from their systems within 24 hours,

and within a few months, ex-smokers report a lessening of pulmonary symptoms, such as shortness of breath, cough, phlegm, and nasal catarrh. Their senses of taste and smell return, peripheral vascular circulation improves, and ex-smokers may experience an improvement in small-airway disease and a slowing in the rate of decline of pulmonary function. Most important, risk of serious disease and premature death declines markedly over the course of several years following smoking cessation, and in people already disabled by frank disease, prospects for recovery improve greatly (U.S. Department of Health, Education, and Welfare, 1979).

Tobacco causes more deaths in the United States than the use of all other dependence-producing substances (McGinnis & Foege, 1993). Our understanding of the causes and consequences of nicotine dependence and the commonalities of nicotine dependence with other forms of drug dependence has advanced through several avenues of research. Laboratory studies have revealed the dependence producing effects of nicotine, such as tolerance (Collins et al, 1988), reinforcement (Corrigall & Coen, 1991), modulation of brain function and cognition (Pickworth et al., 1989, Snyder et al., 1989), and effects on neurotransmitters such as dopamine (Di Chiara & Imperato, 1988). Clinical studies of nicotine dependent people have been critical in characterizing the symptomatology of nicotine dependence, such as difficulty quitting and patterns of relapse (Kottke et al., 1989, Hunt et al., 1971), the nature of the withdrawal syndrome (Hughes & Hatsukami, 1986), and the interrelation between tobacco dependence and other psychiatric disorders (Breslau et al., 1991). Epidemiologic research also provides information on the causes and consequences of nicotine dependence and permits comparisons of tobacco use with the use of other dependence producing substances.

Once tolerance engendered by regular tobacco use is allowed to dissipate, those who are highly dependent on nicotine are more sensitive to nicotine than are less dependent users (Pomerleau, 1995; Pomerleau, Collins, Shiffman, &Pomerleau, 1993). A longer abstinence interval would be required, however, to rule out the possibility that the increased response in high dependent smokers represents a reversal of greater withdrawal effects as reflected by lower baseline levels. We found no significant reductions in craving or withdrawal in response to a controlled dose of cigarette smoke as a function of dependence or depression. Men, however, evinced a

significantly greater decrease in appetite in response to nicotine exposure than did women—possibly related to elevated scores in men before tobacco smoke administration.

Course: Cigarette smoking and tobacco use starts at an early age, usually in response to peer pressure and/or curiosity (Lynch & Bonnie, 1994). The younger the age of initiation, the greater the risk of habitual tobacco use (Burt, Dinh, Peterson, &Sarason, 2000). Social and environmental factors, personal characteristics, expectations of personal effects of smoking, and biological factors influence the initiation of smoking (U.S. Department of Health and Human Services, 2001). A sizable proportion (one-third or more) of children as young as 9 years old have engaged in experimental "puffing," and there is a steady rise with age in the proportion of children who report smoking (Oei&Fea, 1987). Among American children age 13 years and older, only about one-third of those surveyed had not at least puffed a cigarette (Chassin et al., 1981).The rate of progression from experimentation to established smoking is about 32% (Choi, Ahluwalia, Harris, &Okuyemi, 2002). Receptivity to tobacco advertisements and promotions (Sargent et al., 2000), the belief that "I can quit smoking whenever I want" (Choi et al., 2002), and a propensity to risk taking and rebelliousness (Burt et al., 2000) are among a host of variables that distinguish between youth who progress to established smoking and those who do not. Other risk factors for youth progressing to regular smoking include relatively low grades in school, low behavioral self-control, high susceptibility to peer influence, and the belief that they would not be in trouble if their parents knew they were smoking (Jackson, Henricksen, Dickinson, Messer, & Robertson, 1998). By age 14 or 15, cigarette smoking is an established pattern, and little experimentation takes place thereafter (Aitken, 1980). Approximately 60% of high school smokers report that they tried to stop smoking in the past year (Centers for Disease Control and Prevention, 2001). Unfortunately, they suffer failure and relapse rates that exceed those of adults (Ershler, Leventhal, Fleming, & Glynn, 1989). Most adolescent smokers will smoke well into adulthood before they are able to quit (Pierce & Gilpin, 1996). Substance use, in general, increases between adolescence and young adulthood, then declines in the mid-20s. Individuals may discontinue substance use in adulthood, because the responsibilities and demands of marital, occupational, and parental roles are incompatible with substance use (Yamaguchi &Kandel, 1985). Chassin, Presson,

Rose, and Sherman (1996) reported that age related trends for cigarette smoking paralleled those for other drugs in showing a significant increase between adolescence and young adulthood. However, unlike other forms of drug use, there was no significant decline in cigarette smoking in the late 20s. The persistence of cigarette smoking into the late 20s (and beyond) may be due to three factors: (1) Nicotine dependence may contribute to low cessation rates; (2) the negative health impact of cigarette smoking may not be encountered until later ages; and (3) because smoking is a legal behavior whose pharmacological effects are not incompatible with the day-today demands of adult roles, role socialization pressure for cessation may be less intense (Chassin et al., 1996).

Although psychosocial factors play a major role in smoking onset and progression to established smoking in adolescence, addiction to nicotine also is of paramount importance. Recent studies (DiFranza et al., 2002) suggest that children show signs of nicotine dependence within a matter of months of exposure, far quicker than heretofore imagined. Like adults, young people have difficulty stopping smoking (Burt & Peterson, 1998; Green, 1980). The reasons for this difficulty—social pressure, urges, and withdrawal symptoms—implicate behavioural factors and dependence on tobacco (Biglan& Lichtenstein, 1984). Hansen (1983) studied abstinence and relapse in high-school-age smokers (16– 18 years old) who smoked an average of 15–20 cigarettes per day. Most students who quit smoking relapsed within 3 months. Variables that predicted relapse was the number of cigarettes smoked per day and the regularity of a teenager's smoking pattern—findings indicative of tobacco dependence. The early initiation of smoking is of considerable concern to the public health community. The pathogenesis of diseases such as chronic obstructive lung disease and atherosclerotic heart disease begins early in life, and duration of exposure to tobacco contributes to the likelihood of suffering adverse consequences as an adult (U.S. Department of Health, Education, and Welfare, 1979). However, it is not necessary to wait until adulthood to see signs of impaired health. Seely, Zuskin, and Bouhuys (1971) reported that cough, phlegm, and shortness of breath were more common among high school students who smoked than among nonsmokers, with no significant differences between sexes. After high school, there is a gradual transition to regular adult smoking levels, and the relative influence of dependence on nicotine increases (Sachs, 1986). For most, smoking rates will hover around one pack per day

and remain quite stable for most of their adult lives. Others will progress to higher smoking rates, again revealing marked day-to-day stability in nicotine ingestion. Tobacco dependence shows many features of a chronic disease (Fiore et al., 2000). Although a minority of tobacco users achieves permanent abstinence in an initial quit attempt, the majority persists in tobacco use for many years andtypically cycle through multiple periods of relapse and remission. More than 70% of the 50 million smokers in the United States in 2000 had made at least one prior quit attempt, and approximately 46% try to quit each year (Fiore et al., 2000). About 2% per year succeed (U.S. Department of Health and Human Services, 1989b), with most making a number of attempts before succeeding. Nearly half of all living adults who ever smoked have quit (U.S. Department of Health and Human Services, 1989b), and most did so "on their own" (Schachter, 1982).

A person who is physically dependent, but not psychologically dependent can have their dose slowly dropped until they are no longer physically dependent. However, if that person is psychologically dependent, they are still at serious risk for relapse into abuse and subsequent physical dependence. Psychological dependence does not have to be limited only to substances; even activities and behavioral patterns can be considered addictions, if they become uncontrollable, e.g. problemgambling, internetaddiction, computeraddiction, sexualaddiction / pornog raphyaddiction, overeating, self-injury, compulsive buying, or work addiction. There are numerous forces influencing a person's decision to use tobacco, or if that person is a tobacco user the forces that drive continued use or higher consumption. In one situation, it can be an act of rebellion against the traditional notions of morality, while in other situation it may be an act of conformity. There are several approaches to explaining why people use tobacco; **smoking or use of smokeless forms of tobacco is determined by multiple *physiological, psychological and social factors*** (Lichtenstein & Glasgow, 1992). Although there is no generally agreed-upon model of how tobacco addiction starts, research into the psychological, physiological and psychosocial factors has resulted in a far greater understanding of the conditions that may precede, underlie and maintain problems of tobacco addiction. The state of knowledge is still quite crude:-

***Physiological Factors*:** Despite considerable research efforts to find physical factors, either in tobacco itself, or in the biological makeup of those who use tobacco, which could account for its use and addiction, to date, many of the questions remain unsolved. There are some indications that tobacco addiction may be genetically transmitted or encouraged. The use of tobacco runs in families, and some twin and adoption studies suggest that there may be some genetic influences on smoking (Heath & Madden, 1995). Genes that regulate dopamine functioning are likely candidates for heritable influences on tobacco use (Sabol et al., 1999). One view of the role of genes in this process is that polymorphic variability occurring in genes involved in the brain's reward circuitry could cause interindividual difference in the response to addicting substance, the brain's adaptation to them, or both (Caderet et al., 1995). Genetic vulnerability plays a role in the personality traits and behavioral disorders that are associated with increased experimentation with drugs (i.e., initiation): novelty- seeking, impulsivity, attention deficit/hyperactivity disorder, conduct disorder, antisocial personality disorder, mood and anxiety disorders, and response to stress (Nesler, 2005).

***Psychological Factors*:** Leventhal& Cleary (1980) suggested that emotional regulation rather than nicotine regulation is involved in tobacco use. For people who have tried tobacco, fluctuations from emotional or hedonic homeostasis or general optimal levels stimulate tobacco use behavior. Using tobacco is initially aversive behavior, but after sufficient practice, habituation or tolerance occurs. After habituation occurs, smoking or smokeless tobacco use behavior begins to provide adequate positive reinforcement in itself; so that social reinforcement is not a necessary maintaining factor. The individual gradually learns that certain external and internal cues now control the tobacco use behavior and act as discriminative stimuli for situations that are punishing, neutral or reinforcing (Bandura, 1977).

Psychosocial factors: Many researchers believe that social pressure is probably a prime initiator of experimentation with tobacco, particularly for children and adolescents. How an individual take up tobacco can also be due to conformity, compliance and obedience to social norms. Peer influence is one of the most important factors in beginning of tobacco use in adolescence. The reason seems to center primarily on two powerful needs possessed by all human beings- the desire to

be liked or accepted by others and the desire to be right (Deutsch & Gerard, 1955; Insko, 1985) – plus cognitive processes that lead us to view conformity as fully justified after it has occurred (e.g. Griffin & Buehler 1993). Starting the use of tobacco results from a social contagion process, whereby non-users have contact with others who are trying out tobacco or with regular users and then try it themselves (Presti et al.,1992). Youth suffering the insecurities of adolescence may find that the use of tobacco enable them to communicate the image they would like to convey. Consistent with this point, teenagers whose ideal self-image is close to that of a typical tobacco user are most likely to use tobacco. Smoking especially, is seen as mature, rebellious and sexually attractive. The image of tobacco users especially smoker is a significant factor in beginning the use of tobacco. Early on, pre-adolescents develop the image of the smokers as a rebellious, tough, mature, iconoclastic individual (Dinh et al., 1995). Highly dependent children, have been found to be more influenced by the behavior of a model than the less dependent, parental tobacco use plays an important factor for the consumption of tobacco (Jakubczak& Walters, 1959). Whatever the specific cognitive set toward using tobacco, the important issue to be recognized is that attitudes and beliefs about tobacco use, modeling of authority or admired figures, and peer pressure are some of the psychosocial factors that motivate the individual to experiment with tobacco initially.

The advent of tobacco in the early seventeenth century in India evoked mixed responses from a traditional society. While the curiosity to experiment with a novel product aroused interest in its use, the taboos that forbade the use of a culturally alien and potentially noxious substance resisted its acceptance among many sections of the people. There was also a complex interplay of sociocultural factors which influenced not only the acceptance or rejection of tobacco by sections of society but also determined the patterns of use. One aspect common to all forms of tobacco consumption across all societies is the infusion of symbolic and often moral overtones. Just as the symbolic nature of consumption is not identical among different individuals, groups or cultures, similarly the morality intrinsic to tobacco consumption varies. Even the most private, individual act of consumption has social and cultural aspects (Report on Tobacco Control in India, 2004).

The acceptance or rejection of tobacco consumption as a practice must be viewed in the context of the Indian value system which has traditionally emphasized social hierarchies based on factors such as age, gender, caste, wealth, education, professional standing or celebrity status. However, a critical aspect of tobacco consumption is that normality is not uniform over different social settings or groups. The consumption of tobacco has a symbolic aspect that must be explored in terms of the individual's lifestyle, self-image and social relationships. For instance, a younger person putting out a cigarette on seeing a senior is understood (conveyed and received) as a mark of respect and modesty. The gesture communicates that juniors are expected to behave in a certain way in the presence of seniors. It is accepted that comportment is arranged on the axis of authority by age and kinship. In this example are conflated both the manner of consumption of tobacco as well as authority structures. In traditional Indian joint family structures, smoking at home was initially taboo. Later, as the addictive nature of tobacco compelled the user to smoke frequently, the use of tobacco at home became more common. Here too, it was restricted to the dominant male members of the family. The younger members of the family would desist from using it in the presence of the elders and even the 'master of the house' would not use it when an elderly relative, especially an aged, was around. The conviviality of members of different generations smoking together, in a home setting, is rare even today through modernity has led to some relaxation of these rules. The increasing replacement of the joint family by nuclear families, especially in the urban setting, has provided a more permissive atmosphere to use tobacco at home (Report on Tobacco Control in India, 2004).

Health behavior does not occur in a vacuum, but is influenced by normative values, lay health beliefs and the surrounding environment. Socio-demographic factors such as gender, state and region, and rural versus urban residence were found to be related to tobacco. In the context of tobacco use, the particular vulnerability of certain population groups for becoming the victims of tobacco include the poor, the young and women. The risk of tobacco use rose with the duration of its use and diminished with its cessation (Windom, 1992). Typically, smoking occurs first among the wealthy, but later becomes more popular among low-income populations (of both sexes) (WHO, 2001). The epidemic is now shifting to low- and middle-

income countries among men and, increasingly, among women. In Denmark and Germany, more young women (aged 14-19) than young men now smoke (WHO, 2000a; WHO, 2001). Tobacco use is generally more prevalent among lower-income populations, those with mental disorders (including depression) and, in most countries, among men and boys than female (Ernster, 2001; WHO, 2000b). Education, in particular, has a major effect on tobacco consumption. The higher the level of education, the less likely is tobacco use. The poor has less access to education and hence are more vulnerable to acquiring and maintaining tobacco use. In some cases, these social class differences occur because of greater exposure to the problem behaviors and, in other cases, because lower social class raises more stressful circumstances with which the adolescent may need to cope (Wills et al., 1996). In the line of this finding, it can be suggested that stress may be one factor contributing to tobacco use.

Tobacco is the foremost cause of preventable death in the world today. It is well established that overall mortality rates for tobacco user are 60% to 80% higher than for non-users (Gajalakshmi et al., 2003). According to WHO report on the Global tobacco epidemic, 2008, it is the number one killer in the world causing 1 in 10 deaths (10%) worldwide, nearly 5.4 million a year. Most of these deaths are in low-and middle-income countries. It is estimated that 10 million lives will be lost globally by the year 2030 (Gajalakshmi et al., 2001). The effects of the global tobacco epidemic will hit hardest in the developing world, where 80% of these deaths are expected to occur (WHO, 2008), many of these deaths will occur in the productive years of adult life, as a consequence of an addiction acquired in youth. As the second largest producer and consumer of tobacco in the world, India is predicted to have the fastest rate of rise in mortality due to tobacco in the world (Reddy & Gupta, 2004). It is estimated that the tobacco epidemic in India claims 800,000 – 900,000 lives a year. The prevalence of tobacco use among men has been reported to be high (generally exceeding 50%) from almost all parts of India (more in rural than in urban areas) (Gajalakshmi et al., 2001). The dangers of smoking are not confined to the smoker. Studies of secondhand smoke reveal that spouses, family members of smokers and coworkers are at risk for a variety of health disorders.

Findings by the National Youth Tobacco Survey, 2000 indicate that current tobacco use ranges from 15.1% among middle school students (17.6%, male; 12.7%, female) to 34.5% among high school students (39.1% male; 29.8%, female; (Centers for Disease Control and Prevention, 2001). Cigarette smoking is the most prevalent form of tobacco use, followed by cigar smoking and smokeless tobacco use. White (10.8%), black (11.2%), and Hispanic (11.4%) middle school students were significantly more likely than Asian (5.3%) middle school students to smoke cigarettes. There was little difference in rates of cigarette smoking for male (11.7%) and female (10.2%) students (Centers for Disease Control and Prevention, 2001). Nationally, 34.5% of high school students were current users of any tobacco product. White students (38.0%) were significantly more likely than black (26.5%), Hispanic (28.4%), or Asian (22.9%) students to use tobacco products (Centers for Disease Control and Prevention, 2001). In 2000, an estimated 46.5 million adults (23.3%) were current smokers (Centers for Disease Control and Prevention, 2002). The prevalence of smoking was higher among men (25.7%) than among women (21.0%). Among racial/ethnic groups, Asians (14.4%) and Hispanics (18.6%) had the lowest prevalence of adult cigarette use. Native Americans/Alaska Natives had the highest prevalence (36.0%). The smoking rates for whites and blacks were 24.1% and 23.2%, respectively, and the rates of smoking among adult men and women were similar (white: 25.9% and 22.4%, respectively; black: 26.1% and 20.9%, respectively). For Hispanics and Asians, adult men smoked at considerably higher rates than adult women (24.0%, Hispanic men; 13.3%, Hispanic women; 21.0%, Asian men; 7.6%, Asian women). For Native Americans/Alaska Natives, the opposite relationship held (29.1%, men; 42.5%, women; (Centers for Disease Control and Prevention, 2002). Adults who had earned a General Educational Development (GED) diploma had the highest prevalence of smoking (47.2%). Persons with masters, professional, and doctoral degrees had the lowest prevalence (8.4%). The prevalence of current smoking was higher among adults living below the poverty level (31.7%) than those at or above the poverty level (22.9%) (CDC, 2002). In 2000, an estimated 44.3 million adults (22.2%) were former smokers, representing 24 million men and 19.7 million women (Centers for Disease Control and Prevention, 2002). Among smokers, 70.0% reported that they wanted to quit smoking completely; an estimated 15.7 million (41.0%) hadstopped smoking for one or more days during the preceding months because they were trying to quit; and 4.7% of smokers who had smoked every

day or some days during the preceding year quit and maintained abstinence for 3–12 months in 2000. The percentage of ever smokers who had quit varied sharply by demographic group. Variables that emerged as significant predictors of smoking cessation in these studies were older age, higher income, less frequent alcohol intake, lower levels of daily cigarette consumption, longer time to first cigarette in the morning, initiation of smoking after age 20, more than one previous quit attempt, a strong desire to stop smoking, absence of other smokers in the household, and male gender.

For many years in Indian society, the reference point for evolving social norms, for both women and young persons, remains the image of the dominant adult male. So long as tobacco use was seen as a pattern of acceptable or even desirable male behaviour, the urge to attain the same social status made tobacco use attractive to women as well as to young persons. Whether as a symbol of emulation or as a gesture of rebellion, tobacco use became associated with gaining or challenging the power status of the adult male. Smoking habits, which might have their origins in rebellion, or the thrill of illicit experimentation, become linked with freedom, equality and the overcoming of subjection. In many cases, smoking is a defiant act, a rejection of cultural restraints and an affirmation of a woman's identity as a free person with control over her decisions. Across the world, more and more women are taking to tobacco. In Mizoram, while the number of women using tobacco may be a small fraction of the total, it is nevertheless a large absolute number (Report on Tobacco Control in India, 2004). The use of tobacco by women is often considered, by different sections of society, in different ways from that of men.

Smoking or use of smokeless forms of tobacco is a gender-specific social behavior (Mackay &Eriksen, 2002; Unger et. al., 2001a; Zhu et al., 1996). Amos (2013) suggests that two images, that of the woman smoker and the emancipated woman, have been linked in popular perception through advertising. She states that while smoking among women has declined in many developed countries, she predicts an increase in smoking rates in developing regions as women achieve greater spending power, and sociocultural and religious constraints decrease. Such a picture is currently emerging in urban Indiadifferently. In most cases, male

smokers do not evoke specific comment. Smoking is acceptable, seen as 'normal' and therefore not something that specifically strikes the eye. Women smokers, however, do get noticed and are viewed in different ways. From overwhelmingly negative perceptions of women smokers as 'loose women', the associations are changing to a 'cool' or 'modern' image as educated young women and attractive models 'light up'. Women smokers view other women smokers as part of a sisterhood of sorts, as 'someone like me'. This suggests the creation of a particular group identity around smokers, not just as a group who share a common activity, but also in terms of a small subgroup, that of women smokers. This group is always aware of itself and its tenuous identity. The cultural baggage associated with tobacco use also tends to affect where and when women use it. Most women smokers tend to smoke in atmospheres in which they feel 'safe', in pubs, in zenana areas (where only women are permitted), among friends, in anonymous surroundings. For example, smoking is usually avoided in front of the family, elders, or in areas where it may invite comment. On the contrary, some women smokers make a defiant point of lighting up wherever and whenever they feel like, as an expression of their independent self-identity. The rules are a little less stringent for smokeless tobacco, perhaps because it is relatively odourless and less perceptible, less stigmatized for women and easier to conceal. Tobacco use, which among younger groups and women is nearly always a covert activity, is in its smokeless form rendered even more covert by the very nature of smokeless tobacco. These factors, perhaps, contribute to the greater use of smokeless tobacco by women.

In most of the world, being born male is the greatest predictor for tobacco use, with overall prevalence about four times higher among men than women globally (48% versus 12%). The most recent data for China show a dramatic sex gap (63% for men and 3.8% for women [Yang et al, 1999]). A gap persists even among a highly educated sub-group in Chile: 40% of male doctors and 24% of female doctors smoke (Mackay &Eriksen, 2002).Adult men in India have an 11.6 times higher prevalence of tobacco use compared with adult women (WHO, 2005). In particular, a recent cross-sectional study (N = 81,837) reported higher use of smokeless tobacco (e.g., betel quid, mishri, creamy snuff) in women compared with men (Sorensen et al., 2005). The National Family Health Survey (NFHS) 2005-2006 in its state wise data

on tobacco use in India reports that Mizoram continue to show the highest degree of consumption of tobacco both among males and females and increasing as compared to previous surveys. Uses of smokeless forms of tobacco have increased among males than female. Within studies examining gender differences in risk for substance use, susceptibility to the effects of parental tobacco use has been shown to be stronger among females (Curran et al., 1999; Flay et al., 1994; Kandel et al., 1994; Robinson et al., 1997), while socioeconomic status have been supported as stronger predictors of substance use among males. Surveys among American secondary school students found similar smoking rates for girls and boys. But girls who had experienced depression or family violence were more likely to smoke than boys with similar backgrounds (Simantov et al., 2000). Recent review articles agree women and girls tend to smoke as a "buffer" against negative feelings, while men smoke more from habit or to enhance positive sensations (Pande, 2003). Ethnographic research in the Philippines found females expressed emotional dependence on tobacco in the midst of life difficulties (WHO, 2001; Morrow &Barraclough, 2003a), while young urban Vietnamese women said they might start smoking if they become "very unhappy" (Morrow et al., 2002). There is evidence that women and men respond somewhat differently to nicotine, and female addiction may be reinforced more by the sensory and social context of smoking, rather than by nicotine, suggesting that patches may not be such an effective aid (Brigham, 2001). Current smoking figures do not reflect the cumulative hazards of smoking, which depend on several factors including the age of initiation, duration, cigarettes smoked per day, degree of inhalation, tar and nicotine content, and use of smokeless tobacco (Ernster, 2001:1; WHO, 2002).

Tobacco use in women and racial/ethnic minorities is an area of concern based on tobacco-use prevalence rates and the resultant morbidity and mortality. Therefore, it is crucial that tobacco-dependence treatments be as effective as possible in these populations. However, there are reasons to believe that different populations might require different interventions to achieve the greatest net reduction in tobacco-use prevalence. For instance, there is evidence that men and women may differ in facets of tobacco dependence, which should influence ability to quit and response to tobacco-dependence treatments. One potential source of gender differences in tobacco dependence is affective processing. Negative affect has long been implicated in tobacco use (Baker, Morse, & Sherman, 1987; Ikard, Green, & Horn, 1969; Tomkins,

1966; Zinser, Baker, Sherman, & Cannon, 1992**).** Women have much higher rates of affective disorders than do men. For instance, their rate of lifetime major depression is about twice that of men (APA, 1994). Moreover, affective symptoms such as depression and anxiety have been linked to increased rates of smoking, increased rates of smoking initiation, and difficulty quitting (e.g., experiencing more withdrawal symptoms and earlier relapse (Black, Zimmerman, & Coryell, 1999; Brandon, Tiffany, Obremski, & Baker, 1990; Glassman & Covey, 1996). Depressed tobacco users reported having more stress in their lives, fewer coping resources, and lower self-efficacy for quitting than do non-depressed tobacco users (Haukkala, Uutela, Vartiainen, McAlister, &Knekt, 2000; Kinnunen, Doherty, Militello, & Garvey, 1996). This suggests that women's greater affective vulnerabilities may produce more severe or prolonged tobacco-withdrawal symptoms (Gritz, Nielson, & Brooks, 1996; Piasecki, Fiore, & Baker, 1998). Not only are women more likely than men to experience severe negative affect, they are also apt to cope with negative affect in different ways (Hovanitz&Kozora, 1989). New research by Taylor, Klein, Lewis, Gruenewald, Gurung, and Updegraff (2000) suggests that women respond to stress with 'tend-and-befriend' mechanisms designed to care for offspring, to protect the self and others, and to create and maintain social networks rather than utilizing the standard 'fight-orlight' response to stress. Other research suggests that men have a broader repertoire of coping responses than do women and, in comparison with men, women report having more problems coping with stress and relying more on smoking as a coping response (Grunberg, Winders, &Wewers, 1991; McDaniel & Richards, 1990). Data reported by Nolen-Hoeksema (1987) show that when women deal with negative affect they are more likely than men to ruminate and dwell on their problems; men are more likely to distract themselves. These different repertoires and strategies for dealing with negative affect could render women more dependent on tobacco for ameliorating stress or dysphoria, more vulnerable to social cues to smoke, and more vulnerable to cravings and other withdrawal symptoms.

The two genders may also differ in the importance of different types of reinforcement derived from tobacco use. Some evidence suggests that women are less drawn to the pharmacological properties of tobacco use and are more influenced by social/affiliative consequences of smoking, by ritualistic/habitual elements, or by sensory properties related to smoking (Eissenberg, Adams, Riggins, &Likness, 1999;

Perkins et al., 1999; Perkins, 1996). Furthermore, some studies show that women report less dependence on nicotine in that they tend to smoke fewer cigarettes per day and generally have lower scores on questionnaire measures of nicotine dependence (Perkins, 1996). However, despite the possible reduced pharmacological reinforcement and the suggested lower level of dependence, women appear to have at least as much difficulty foregoing smoking as do men. Taken together, these differences in negative affect, experience of withdrawal, coping styles, and reinforcement properties of tobacco use, all suggest some fundamental differences in mechanisms of tobacco reinforcement and dependence for men and women. These differences further suggest that tobacco-dependence treatments may have different efficacy in men and women, and that the two genders may require different types of treatment for optimal outcomes. Women and racial/ethnic minorities make up a large proportion of the tobacco users and a lack of information about tobacco-use treatments these populations could have great public health significance. In 1997, 22.3 million women were current smokers, constituting approximately half of the total smoking population (CDC, 1999). In addition, it has been estimated that adolescent boys who start smoking now will smoke for approximately 16 years, but that adolescent girls will smoke for at least 20 years (Pierce & Gilpin, 1996). Moreover, smoking results in similar adverse health effects for women as it does for men. Women who smoke more than 15 cigarettes per day, compared to women who do not smoke, are more than five times as likely to have a cardiac event, such as a non-fatal myocardial infarction, or to die from coronary heart disease (Stampfer, Hu, Manson, Rimm, & Willett, 2000). Some studies suggest that women may be at even greater risk than men for smoking-related diseases like lung cancer, myocardial infarction, and severe, earlyonset chronic pulmonary disease (Kure et al., 1996; Prescott et al., 1998; Silverman et al., 2000; Zang&Wynder, 1996).

If gender and race/ethnicity affect processes related to tobacco dependence and reinforcement, this raises the possibility that tobacco-dependence treatments have different efficacy in different populations. There is evidence to support this proposition. For instance, there is evidence from clinical trials that compared to men, women are less successful quitting smoking across different pharmacotherapeutic and counseling treatments (Perkins, 1996; Perkins et al., 1999; Wetter et al., 1999). However, it is vital to recognize that there appears to be an interaction between

treatment and gender, such that women have lower quit rates than men for some treatments but not others (e.g., bupropion SR; Smith et al., 2000). While some studies do not report a significant difference between men's and women's quit rates, the 1980 Surgeon General's Report and, more recently, Perkins *et al*. have concluded that no published studies show higher abstinence rates for women than for men following formal cessation programs (Perkins *et al.*, 1999; USDHHS, 1980). Finally, some data suggest that, on average, women are less confident in their ability to quit, less committed to quitting, less likely to try to quit smoking and more likely to relapse if they do quit (Audrain, Gomez-Caminero, Robertson, Boyd, Orleans, &Lerman, 1997; Gritz*et al.*, 1996; Perkins, 1996). As our knowledge of tobacco dependence and cessation matures, the culture of cessation science will need to mature. We can no longer focus exclusively on smokers as a homogeneous group utilizing tobacco-dependence treatments. The time has come to broaden the focus of tobacco-dependence treatment investigations. The foundation of knowledge now exists to allow the field to examine not just the efficacy of tobacco-dependence treatments in randomized controlled trials but also the effectiveness of these treatments in everyday settings, such as clinics, hospitals, and public health centers. Doing so will aid in gaining a better understanding of how addiction is influenced by gender, cultural, affective, and socioeconomic factors.

Tobacco dependency and the ability to quit are believed to be strongly influenced by physiological and psychological factors. Some psychological factors are addressed in relation to tobacco use and dependency for the present study:

Anxiety is a state of psychic distress characterized by fear, apprehension, and physiological arousal. It is defined as a future-oriented state involving perceived uncontrollability and unpredictability over dangerous events or the person's emotional response to those events (Barlow, 2002). Anxiety among adolescents is widely prevalent in the U.S., with estimated rates ranging from 5.7% to 17.7% (Costello &Angold, 1995; Woodward & Fergusson, 2001; Zahn-Waxler et al., 2000). There is some indication that there may be gender differences in the links between anxiety and substance use and related problems (see review by Armstrong and Costello 2002). Numerous studies suggest that anxiety and depression may play a role in the initiation, maintenance, and cessation of smoking behavior (e.g., Breslau, Kilbey,

&Andreski, 1991; Glassman et al., 1990; Hall et al., 1993). Smokers are also seen to exhibit higher baseline levels of anxiety than non smokers (McCrae et al., 1978; Schneider & Houston, 1970; Williams et al., 1982). A number of studies implicate anxiety as an integral component of the nicotine withdrawal syndrome (Hughes, 1992; Hughes &Hatsukami, 1986). The DSM-IV-TR (APA, 2000) lists anxiety as a symptom of the nicotine withdrawal syndrome, but does not operationally define the construct to distinguish between clinical anxiety and anxious mood. The relationship between anxiety and smoking appears more tenable in adults (Hughes, Hatsukami, Mitchell, and Dahlgren, 1986). A recent study conducted in a nationally representative sample found the prevalence of mood disorders and anxiety disorders to be 21.1 and 22%, respectively, among individuals diagnosed with nicotine dependence (Grant, Hasin, Chou, Stinson, & Dawson, 2004a). These prevalence estimates are much higher than those in the general population (9.2% for mood disorder and 11.1% for anxiety disorder; Grant et al., 2004a,b). Nicotine-dependent individuals were 3.3–3.9 times as likely to have an anxiety disorder, and 2.6–4.6 times more likely to have a mood disorder (Grant et al., 2004a). There is evidence suggesting that high levels of trait anxiety are related to coping strategies for substance use, including tobacco use (Comeau et al., 2001; Steward &Zeitlin, 1995). Cooper's (1994) motivational theory proposed that negative affect plays a central role in substance use, including tobacco. One study found that social anxiety was associated with increased risk for the development of tobacco dependence (Sonntag et al., 2000), though another study found a delayed onset of smoking in adolescents with anxiety disorders (Costello et al., 1999). Some studies indicate that there may be gender differences in the links between anxiety and substance use and related problems (Armstrong & Costello, 2002). (Feldner et al., 2007), it was suggested that smoking or smokeless tobacco use behavior may increase the risk for anxiety psychopathology and anxiety may increase smoking and tobacco use behavior. A number of studies implicate anxiety as an integral component of the nicotine withdrawal syndrome (Gilbert et al., 1998a, b; Hughes, 1992; Hughes et al., 1991; Hughes &Hatsukami, 1986).

The DSM-IV (American Psychiatric Association, 2000) lists anxiety as a symptom of the nicotine withdrawal syndrome, but does not operationally define the construct to distinguish between clinical anxiety and anxious mood. Smokers often

report that they smoke to relieve anxiety (Schneider & Houston, 1970), and studies show that smokers smoke more in stressful and anxiety-provoking situations (e.g., Rose et al., 1983). Smokers often report that they smoke to relieve anxiety (Schneider & Houston, 1970), and studies show that smokers smoke more in stressful and anxiety-provoking situations (e.g., Rose, Ananda, &Jarvik, 1983). Smokers also exhibit higher baseline levels of anxiety than nonsmokers (McCrae, Costa, & Bosse, 1978; Schneider & Houston, 1970; Williams, Hudson, & Redd, 1982). Research in this area, however, has generated mixed results. A more recent study of German adults revealed significant comorbidity between being a daily smoker and having an anxiety disorder (John, Meyer, Rumpf, & Hapke, 2004).In a parallel line of research, there has been mounting evidence of strong links between cigarette smoking/nicotine dependence and mood and anxiety disorders among adults in the community (Breslau, 1995; Breslau, Kilbey, &Andreski, 1991; Nelson &Wittchen, 1998; Sullivan &Kendler, 1998). A recent study indicated that over 70% of cigarettes are consumed by adults with at least one mental disorder (Grant, Hasin, Chou, Stinson, & Dawson, 2004; Mykletun, Overland, Aaro, Liabo, & Stewart, 2008). Nicotine dependence is also highly comorbid with anxiety/mood disorders (John, Meyer, Rumpf, &Hapke, 2004; Zimmerman, Chelminski, &McDermut, 2002).

The “self-medication” model of substance use(Sher, 1991) and the concept of “negative affect alcoholism” (Zucker, 1987) are based on the theory that people who experience uncomfortable negative feelings, such as depression or anxiety, may use substances to help them cope with these feelings. These feelings may lead to problems related to heavy substance use as people find the use of substances reinforcing (because it decreases uncomfortable feelings) and therefore increase the frequency and quantity of their use. One study found that social anxiety was associated with increased risk for the development of tobacco dependence (Sonntag et al. 2000), though another study found a delayed onset of smoking in adolescents with anxiety disorders (Costello et al. 1999). As has been found to moderate the association between smoking and panic problems among adults (Zvolensky, Kotov, Antipova, &Schmidt, 2003) and adolescents (Feldner, Babson, &Zvolensky, 2007), have suggested smoking may increase the risk for anxiety psychopathology and anxiety may increase smoking behaviour. There has been an increased recognition that smoking is related to specific types of anxiety-related problems among youth

(e.g., Johnson et al., 2000) and adults (e.g., McCabe et al., 2004). Of the anxiety disorders, there appears to be a particularly notable association between smoking and panic attacks, panic disorder, and agoraphobia (see Zvolensky, Feldner, Leen-Feldner, & McLeish, 2005, for a review). For instance, epidemiological (Lasser et al., 2000), community (Hayward, Killen, & Taylor, 1989), and clinical (Himle, Thyer, & Fischer, 1988; Pohl, Yeragani, Balon, Lycaki, & McBride, 1992) studies have found that smoking is more common among those with panic-related problems compared to those without such problems. Other work has found that smoking increases the risk for developing panic attacks and panic disorder in the future (Isensee, Wittchen, Springer Stein, H¨ofler, &Lieb, 2003) and that panic-related vulnerability factors are associated with poor smoking outcomes (Zvolensky, Lejuez, Kahler, & Brown, 2004)**.** Nicotine-based withdrawal symptoms are a risk factor for anxious and fearful responding to bodilysensations among daily smokers (Zvolensky, Feldner et al., 2005)

Smoking rates remain high among individuals with particularly compelling needs for nicotine, such as those individuals who desire regulation of negative affective states like anxiety and depression (Cohen, McCarthy, Brown, & Myers, 2002; Gilbert&Wesler, 1989). Comorbidity estimates between smoking and any type of anxiety disorder range from 9% to 62%, with nicotine-dependent smokers exhibiting higher levels of comorbidity (see Breslau et al., 1991; Degenhardt, Hall, &Lynsky, 2001). A more recent and increasingly robust body of literature has begun to examine the linkages between smoking and anxiety-related disorders (Feldner, Babson, &Zvolensky, 2007; Morissette, Tull, Gulliver, Kamholz, &Zimering, 2007; Patton et al., 1998; Zvolensky, Feldner, Leen-Feldner, & McLeish, 2005). Several empirical studies have demonstrated that smoking at higher rates may be concurrently and prospectively associated with an increased risk of more severe anxious arousal symptoms and greater life impairment related to such symptoms (Breslau & Klein, 1999; Breslau, Novak, & Kessler, 2004). Anxiety disorders are also thought to directly contribute to smoking frequency and cessation failure. Smokers frequently endorse smoking to reduce anxiety, and negative affect is a strong predictor of relapse (Kassel, Stroud, &Paronis, 2003). Furthermore, it has been proposed that the cues for smoking and anxiety may become cross-conditioned so that they are mutually reinforcing (Morissette et al., 2007). That is, cues for anxiety may come to elicit smoking cravings and vice versa.

Another anxiety disorder related to smoking is panic disorder (PD). Some have suggested the physical sensations from withdrawal, and alternative coping strategies, physical impairment, and poorer perceived health associated with smoking may lead to panic attacks (Zvolensky, Schmidt, & Stewart, 2003). In addition, poor distress tolerance and high emotional reactivity and anxiety sensitivity found in PD may contribute to relapse following cessation attempts due to the inability to with-stand physical and emotional symptoms of withdrawal. In line with this type of perspective, Lasser et al. (2000) found prevalence estimates of current smoking that were higher among individuals with PD than among the general population (35.9% vs. 22.5%). Similar estimates were found among those reporting panic attack history (38.1%). McCabe et al. (2004) also found rates of current and heavy smoking to be elevated among a treatment-seeking sample of individuals with PD compared with those with social anxiety disorder (SAD) and obsessive-compulsive disorder, thus providing support for the unique relationship between PD and smokingIndeed, the higher rates of psychological distress found in smokers may be related to difficulties in smoking cessation. The "selection hypothesis" of tobacco use posits that smokers who are burdened by psychiatric difficulties, such as anxiety, may have a harder time quitting than those with lower levels of distress (Coambs, Kozlowski, &Ferrence, 1989; Hughes & Brandon, 2003). Indeed, those who are successful in quitting smoking have lower rates of psychological distress than those who do not quit. Based on this hypothesis, we would expect to see higher prevalence rates of anxiety disorders among tobacco users.

Depressionis a mental state, organic or circumstantial, characterized by prolonged and disproportionate feelings of sadness, pessimism, helplessness, apathy, low self-esteem and despair. According to cognitive theory of depression (Beck, 1987), depression is associated with pessimistic expectancies, a negative view of the future comprising one aspect of the negative cognitive trait. Given this generalized pessimism, it would seem plausible that smokers and smokeless tobacco users are prone to depression might be more likely to expect to develop heart disease or cancer, or to experience negative physical sensations or social judgments from others as a result of their tobacco use habit. However, negative expectancies would seem to discourage tobacco use behavior, yet depression is positively correlated with tobacco use (Kinnunen et al., 1996).The lifetime prevalence of major depression among the general population in

the United States is approximately 13% (Hasin, Goodwin, Stinson, & Grant, 2005). In prospective studies, depression has been associated with smoking initiation in the presence of peer smoking (Patton et al., 1998), regular smoking (Breslau, Novak, & Kessler, 2004; Breslau, Peterson, Schultz, Chilcoat, &Andreski, 1998), and the transition from regular smoking to nicotine dependence (Breslau & Johnson, 2000). Depression is strongly associated with tobacco use, and women have about twice the rate of depression than men. However, it is not known whether depression is a cause or an effect of smoking, or whether common factors predispose people to both (Ernster, 2001:5; WHO, 2000b). Consistent with previous studies, gender differences were frequently noted with respect to the effects of depression on smoking behavior. Specifically, girls who had been depressed were more likely to be current smokers than depressed boys (Acierno et al., 2000). The use of tobacco interacts synergistically with depression such that a depressed person who uses tobacco is at substantially greater risk for cancer. Immune alterations associated with major depression interact with smoking to elevate white blood cell count and to produce a decline in natural killer cell activity. Natural killer cells are thought to serve a surveillance function in detecting and responding to early cancers. The self-medication hypothesis proposes that the use of tobacco may develop in an attempt to cope with psychological distress and feelings of depression (Cooper, 1994; Glass, 1990; Penny& Robinson, 1986). The association between depression and cigarette smoking can be categorized as confounding or causal. The confounding explanation posits that the association between smoking and depression is due to common genetic or environmental confounding factors that are associated with increased risk of both depression and cigarette smoking. Kendler and colleagues (1993) evaluated the association between lifetime daily cigarette consumption and lifetime depression and observed a significant overlap between the genetic factors that imparted risk for depression and smoking. Lyons and colleagues (2008) replicated this finding and extended the common genetic explanation to lifetime nicotine dependence. In contrast, a case-control family study (Dierker, Avenevoli, Stolar, & Merikangas, 2002) found evidence for shared familial vulnerability to dysthymia and heavy smoking (20 or more cigarettes per day) but not for depression and heavy smoking. Studies have examined behavioral and environmental factors to assess the association between smoking and depression. Controlling for confounding variables has not explained the association between depression and smoking after controlling for age

(Breslau, Kilbey, & Andreski, 1993), ethnicity (Perez-Stable, Marin, Marin, & Katz, 1990), education level (Son, Markovitz, Winders, & Smith, 1997), and other psychiatric disorders (e.g., alcohol dependence; Breslau, Kilbey et al., 1991).

Two studies have investigated potential psychological mediators. Lerman and colleagues (1996) examined linkages between depressed mood and degree of nicotine dependence in adult smokers involved in treatment and found that self-reported smoking to relieve negative affect and to provide stimulation sequentially mediated the relationship between depressed mood, as measured using the Center for Epidemiological Studies Depression Scale (CES-D), and degree of nicotine dependence (Lerman et al., 1996). Depressive symptoms can also leave a person to more vulnerable to peer tobacco use influences. The anticipated improvement in mood and psychosocial functioning is a potentially powerful motivating factor for tobacco use (Patton et al., 1998). The fact that tobacco is now considered to be a potential cause of depression, especially in young people makes the concern about the synergistic impact of tobacco abuse and depression on health even more alarming. With respect to mental disorders, Breslau noted that young adults with "moderate" nicotine dependence were more than five times as likely to report past depression relative to nonusers. In a follow-up study employing a longitudinal design (Breslau et al., 1993), these investigators found that depressed participants were more than twice as likely to progress from nicotine nondependence to dependence.

The association between depression and tobacco use has been well documented over the past two decades. In cross-sectional studies, tobacco users, compared with never-users, have higher rates of major depression (Breslau, Kilbey, &Andreski, 1991), and tobacco users, particularly those who are nicotine dependent, are more than twice as likely as non-users to have a history of major depression (Breslau & Johnson, 2000; Glassman et al., 1990). The lifetime prevalence of depression appears to be especially high among smokers in clinic-based smoking cessation treatment, with rates as high as 53% among studies not targeting depression-vulnerable smokers (Hitsman, 2006; Hitsman, Borrelli, McChargue, Spring, &Niaura, 2003). The comorbidity between lifetime depression and smoking remains when controlling for age (Breslau, Kilbey, &Andreski, 1993), ethnicity (Pe´rez-Stable, Marı´n, Marı´n, & Katz, 1990), educational level (Son, Markovitz, Winders, & Smith,

1997), and degree of nicotine dependence (Killen et al., 1996). Nicotine dependence is a more complicated construct because of its reliance on initiation of smoking. Heath, Meyer, Eaves, and Martin (1991) observed that the inclusion or exclusion of abstainers, that is, those who had never initiated use, in the evaluation of secondary substance use outcomes (e.g., persistence or dependence) may bias the derived genetic and environmental estimates. Several studies have considered this issue and demonstrated significant genetic influences on nicotine dependence (Sullivan &Kendler, 1999). In a recent example, Maes and colleagues (2004) observed genetic influences on smoking initiation, daily smoking, and nicotine dependence in the Virginia Twin Registry, while controlling for the influence of earlier stages of use on later stages. A number of psychobiological mechanisms have been suggested as the basis of the observed association between tobacco use and depression. Depression could serve as a reinforcer of regular smoking/tobacco use in part because the neuropharmacological effects of smoking and nicotine may ameliorate some symptoms of depression, or regular smoking could promote depressive symptoms secondary to certain neuroadaptations that may occur within the central nervous system following chronic nicotine exposure (Hughes, 1999). The observed pattern of association is also consistent with shared vulnerability factors predisposing to both tobacco use and depression. That is, some factor or set of factors might exist that imparts risk for both major depression and tobacco use. Several family and twin studies have evaluated the possibility of a shared vulnerability for major depression (or depressive symptoms) and tobacco use.

Covey and colleagues (1999) found that tobacco users with a history of major depression reported depressed mood and poor concentration more frequently than those without past depression. Pomerleau and colleagues (2004) observed greater affective withdrawal symptomatology (irritability, anxiety, difficulty concentrating, restlessness, depression, and insomnia) among nontreated tobacco users with a history of depression than among those without depression, despite lower baseline levels of nicotine intake. Two other treatment studies, however, found no differences in severity of withdrawal as a function of lifetime depression (Covey, Glassman&Stetner, 1990, 1998)

Stress refers to an internal state which can be caused by physical demands on the body or by environmental and social situations which are evaluated as potentially harmful, uncontrollable, or exceeding the individual's resources for coping (Lazarus & Folkman,1984). It is common to think of stress as being a special class of experiences. It may be, however, that stress is nothing more (and nothing less) than the experience of encountering or anticipating adversity in one's goal-related efforts. It is often said that stress exists when people confront situations that tax or exceed their ability to manage them (e.g., Lazarus 1966, 1999; Lazarus & Folkman 1984). Whenever a person is hard-pressed to deal with some obstacle or impediment or looming threat, the experience is stressful. Tobacco is used as a stress buffer for many people; it acts as a coping method even though the results are dangerous. Stress and the use of tobacco can interact in dangerous ways. For men, nicotine can increase the magnitude of heart rate reactivity to stress. For women, it can reduce heart rate but increase blood pressure responses, also an adverse reactivity pattern. The stimulating effects of nicotine on the cardiovascular system may put tobacco users at risk for a sudden cardiac crisis, and the long-term effects on reactivity in response to stress may aggravate coronary heart disease risk factors. Previous studies done in the U.S. states that tobacco use is associated with reduction of frustration, irritation, and anger at a time of substantial distress (Jamner et al., 1999; Johnson, 1990). Exposure to traumatic events is associated with increased tobacco use behavior (Feldner et al., 2007). Greater posttraumatic stress symptom levels are related to higher smoking levels (Beckham et al., 1995; Schnurr&Vielhauer, 1999).

Naquin and Gilbert (1996) found that current smokers and tobacco users reported higher levels of perceived stress compared to those who did not use tobacco. Furthermore, Piasecki et al. (2007) reported that daily compared to nondaily tobacco users were more likely to cite coping with negative affect as a reason for tobacco use. Nichter, Nichter, Carkoglu, and TERN members (2007) found that smoking to alleviate distress was a common motivation for college smokers, and that smoking cigarettes was viewed as a nonverbal signal of stress, presumably with the goal of obtaining social support. All of these studies support links between stress/NA and smoking. High stress levels are associated with the initiation of smoking and tobacco use among young people. For example, among clinic attendees aged 12–21 years, nearly three quarters stated that they progressed from initiation to regular tobacco use

because they felt stressed; a third stated that smoking or using other forms of tobacco helped them deal with problems (Siqueira, Diab, Bodian and Rolnitzky, 2000). There is some evidence to indicate that this association between smoking and stress may be stronger among adolescent girls than among boys (Booker et al., 2007). Although cigarette smoking and using tobacco may be a response to dealing with stress, there is a parallel body of research to suggest that smoking and tobacco use is related to more "negative" coping strategies, such as distraction and denial, and the use of less restraint or use of aggression. Conversely, nonsmoking is associated with more positive or adaptive coping, including seeking adult support and behavioral coping (Siqueira, 2000; Sussman et al., 1993; Vollrath, 1998). Despite being regarded as a way, smoking and using tobacco in adolescence predicts maladaptive coping in adulthood to deal with stress, smoking remains a relatively weak coping mechanism (Koval & Peterson, 1999). Much of this research on stress, coping, and tobacco in adolescence has relied, at least in part, on cross-sectional studies (Siqueira et al., 2000), making it difficult to identify causal directions among stress, coping, and smoking.

Exposure to traumatic events is associated with increased smoking behavior (Feldner, Babson, &Zvolensky, 2007). This association has been observed across exposure to several different traumatic event types, including combat (Beckham et al., 1995, 1997; Shalev, Bleich, &Ursano, 1990), physical and sexual assault (Acierno, Kilpatrick, Resnick, Saunders, & Best, 1996; Acierno et al., 2000), and acts of terrorism (Pfefferbaum et al., 2002; Vlahov et al., 2002). Similarly, traumatic event-exposed individuals with, versus without, associated psychopathology are more likely to be current smokers (Acierno et al., 1996), begin smoking (Breslau, Davis, & Schultz, 2003), smoke at higher rates (Beckham et al., 1997), and evidence greater puff volumes (which maximize smoke delivery) while smoking (McClernon et al., 2005). Similar relationships have been observed in adults with anxiety disorders, including PTSD. Two studies of posttraumatic stress disordered veterans (Beckham et al., 1995; Shalev, Bleich, &Ursano, 1990) showed that rates of smoking were relatively higher (approximately 63%) than those observed in the general population (about 20–30%; Department of Health and Human Services, 1990; Hughes, Hatsukami, Mitchell, & Dahlgren, 1986).Financial pressure, family conflicts, and

stress at work/school are identified as important contributing factors (Pearson, Phillips, He, &Ji, 2002; Yip, 2001).

Coping is a goal-directed process in which the individual orients thoughts and behaviors toward the goals of resolving the source of stress and managing emotional reactions to stress (Lazarus, 1977; Folkman& Lazarus, 1980). Coping style means a characteristic or typical manner of confronting a stressful situation and dealing with it (Folkman& Lazarus, 1985). Lazarus and Folkman (1987) propose that by understanding the individual's internalized cultural and social norms, we can begin to understand and predict what that individual will perceive to be stressful, and how that individual will react to, or cope with, the stressor. The coping styles broadly consist of three - Task-Oriented, Emotion-Oriented and Avoidance-Oriented coping styles which are inevitably necessary for effective functioning in the frustrated situation. Task-oriented coping is concerned with purposeful task-oriented efforts focusing on solving the problem, cognitively restructuring it, or attempting to change the situation. Emotion-oriented coping is concerned with self-oriented emotion reactions. The goal is to reduce stress, but this is not always accomplished. Avoidance – behavioral coping is the conscious decision to physically remove oneself from threatening environment such as walking away from stress source, avoiding a threatening environment which an individual used as an effort to reduce or eliminate cues that perceived as threatening or harmful**.** Host of studies stated that coping has been primarily conceptualized as a response of external stressful situation rather than internally motivated threat, and the involve conscious strategies or styles on the part of person (Billings & Moos, 1981; Folkman& Lazarus, 1980; & 1988; and McCrae, 1984), some people may have particular preference of coping styles in response to different situations. Lack of coping skills to stressful situations and unsuccessful adjustment to dramatic life changes may lead to the adoption of maladaptive behaviors (Comeau et al., 2001; Coogan et al., 1998; Henker et al. 2002).Albuquerque (1987) studied coping behavior of college students in relation to life stress and strain and stated that males experienced greater number of life events and strains and more distress than females. If an individual expects that the use of tobacco will help him or her feel better, then he or she may be more likely to use tobacco to relieve negative effect. Over time, this may become a conditioned association (Carmody, 1992). Tobacco use behavior is thought of to be in part an

avoidance/escape response to such negative emotional events as the experience of stress and anger. This escape response is a potential coping response, and although it initially provides relief, it has long term negative health consequences. However, when the reinforcement effects become powerful, the response may generalize to other negative emotional states, such as anxiety and sadness. Given the various possible mechanisms, the use of tobacco can be seen as providing both positive and negative reinforcement over a wide array of internal and external events. Young adults who begin the use of tobacco may believe that it will improve their ability to cope with stress, as it is often seen in college and medical students (Smith, 1970). Adolescents who get involve in health risk behaviors often have high levels of conflict with their parents and poor self-control, suggesting that these behaviors may function in part as a coping mechanisms to manage a stressful life (Cooper et al., 2003; Wills et al., 2000)**.**

Kaplan et al. (1988) for physical abuse, associations between violence and cigarette use were pronounced. Cigarette and other substance use in adolescents exposed to violence may be conceptualized as a coping strategy to deal with anxiety and negative effect.Lack of coping skills to stressful situations and unsuccessful adjustment to dramatic life changes may lead to the adoption of maladaptive behaviors among adolescents (Comeau et al., 2001; Coogan et al., 1998; Henker, Whalen, &Jamner, 2002; Koval& Pederson, 1999).According to social learning theory, tobacco use gradually becomes a conditioned response to negative effect, alternative coping skills are inhibited in favor of tobacco, and the individual learns that negative affect can only be controlled by tobacco (see Brandon, 1994). Avoidance-oriented coping styles frequently characterize individuals with emotional problems (Hayes et al. 1996) and are related to an increased risk for the future experience of negative emotional states (Spira et al. 2004).

According to stress-coping theory, a stressor will not negatively impact individuals who possess resources to adequately cope (Lazarus &Folkman, 1984). To our knowledge, no studies have examined coping as a moderator of the association between violent victimization and substance use among adolescents. Some studies suggest that adaptive coping may protect youth from broadly defined behavioral problems in response to violence exposure. Cross-sectional (Wills, 1986) and

prospective (Wills, Sandy, Yaeger, Cleary, & Shinar, 2001) studies among ethnically diverse adolescents show that associations between general stressors and substance use are not as strong among adolescents who engage in high levels of behavioral coping (e.g., problem solving) or cognitive coping (e.g., positive reappraisal of stress).Research suggests that behavioral coping protects adolescents from engaging in substance use as a response to general stressors (Wills, 1986; Wills et al., 2001). In the present study, adolescents who engaged in higher levels of behavioral coping engaged in less substance use, independent of victimization history. Results suggest that both cognitive and behavioral coping strategies may contribute to long-term positive outcomes among adolescents. Interestingly, lower levels of behavioral coping were reported by adolescents who had been involved with violence and by adolescents of lower socioeconomic status. It may be that environments characterized by less control provide fewer opportunities to learn behavioral coping strategies. Behavioral coping strategies may also be less effective in environments that are disempowering. Because behavioral coping may result in more positive outcomes than engagement in cognitive coping alone when stressors are controllable (Lazarus &Folkman, 1984), disadvantaged adolescents may benefit from targeted interventions to strengthen both cognitive and behavioral coping skills.

Personality refers to the characteristics and unique ways in which an individual responds to the environment. Personality is the dynamic organization within the person of the psychological and physical systems that underlie that person's patterns of actions, thoughts, and feelings (Allport, 1961). According to the personality theory of Eysenck, there are three personality factors: Psychoticism, Extraversion and Neuroticism. Psychoticism is an independent dimension which describes the personality as solitary, troublesome, cruel, and lacking in feeling and empathy, hostile to others, sensation seeking, and liking odd and unusual things. Neuroticism refers to the general emotional liability of a person, his emotional responsiveness and his liability to neurotic breakdown under stress.Traits correlating to define this type are moodiness, sleeplessness, nervousness, inferiority feelings and irritability. The personality trait of neuroticism is known to be associated with anxiety and depression (Clark et al., 1994). Extraversion refers to the out-going, uninhibited, sociable proclivities of a person (Eysenck, 1970a). Research on the association of neuroticism and extraversion with anxiety and depression has focused largely on the addictive

effects of these traits. However, there have been theoretical predictions that introversion and neuroticism interact to affect anxiety (Wallace et al., 1991). Research has demonstrated consistently that smokers and tobacco users score higher on personality scales measuring a tendency to experience negative emotions and lower on scales indicative of the ability to constrain behavior. Over a decade ago, a major review concluded that tobacco users, compared with nonusers, were more likely to be high in traits such as depression, anxiety, anger, social alienation, impulsivity, sensation seeking, and psychoticism and low in traits such as conscientiousness and agreeableness (Gilbert &Gilbert, 1995).

Major reviews demonstrated a link between tobacco use and higher neuroticism, extraversion, hostility, aggression, novelty seeking, impulsiveness, excitement seeking, and sensation seeking and lower agreeableness, conscientiousness, self-discipline, and constraint (Calhoun, Bosworth, Siegler and Bastian, 2001; Whiteman, Fowkes, Deary and Lee, 1997) with neuroticism demonstrating a consistent relationship with tobacco dependence (Breslau, Kilbey, & Andreski, 1993). Certain personalitytraits are related to adolescent substance use like tobacco and alcohol (Brook et al., 1998b; Farrell et al., 1992; Hawkins et al., 1985). Trait variables have also long been evaluated for their potential to provide insight into tobacco use and its cessation (Eysenck, 1980b; Gilbert, 1995; Smith, 1970). The major personality dimensions expected to be related to adolescent substance use include unconventionality (i.e., rebelliousness and delinquency), psychopathology, and impulsivity. Evidence among adults suggesting neuroticism is related to both smoking and panic attacks (Goodwin & Hamilton, 2002). Other investigators conceptualize personality among tobacco users as a system of multiple cognitive and affective constructs that are activated by myriad diverse contextual stimuli and can be understood by analyzing in detail the within person structure, dynamics, and idiosyncrasies within each users personality system (Cervone, 1991; Shadel, et al., 2000). Psychiatric history may moderate the association between personality and smoking. For example, Krueger et al. (1996) found that personality traits were more strongly related to a given psychiatric disorder when examining those with comorbid psychopathology than when examining only “pure” cases of the disorder. Likewise, tobacco use may be more strongly related to personality variation associated with psychiatric comorbidity than it is with variation in personality among those with no

psychiatric disorder history. In an early review of literature, Smith (1970) noted that smokers and tobacco users generally scored higher on measures of Extraversion, but his conclusions were mixed regarding differences between smokers and nonsmokers on Neuroticism. Gilbert (1995) reviewed studies conducted since the Smith (1970) review and concluded that only a little more than half of these studies found that smokers scored significantly higher than nonsmokers on assessments of Neuroticism and Extraversion. Certain adolescent personality traits are also related to adolescent illegal drug use (Brook et al., 1998b; Farrell et al., 1992; Hawkins et al., 1985). Smoking rates and patterns can change considerably over time (Shiffman, 1989), especially after a quit attempt (Mermelstein, Gruder, Karnatz, Reichmann, & Flay, 1991), smoking can be highly variable across both persons and in the situations which trigger smoking and relapse (Shiffman, 1991), and coping strategies are situationally moderated (Shiffman, Paty, Gnys, Kassel&Hickcox, 1996). Evidence among adults suggesting neuroticism is related to both smoking and panic attacks (Goodwin & Hamilton, 2002). The statement of the problem of the present study is presented in the next Chapter.

Chapter- II
STATEMENT OF THE PROBLEM

Good health should be an entitlement of every citizen. Health, defined in its broadest conceptualization, is a dynamic state of complete physical, psychological, social and spiritual well-being wherein physiological, psychological, regard for societal roles and norms, and the transcendent purpose of existence are incorporated (Nutbeam, 1997). However, it is widely recognized that social, economic and political conditions and forces include both the underlying determinants of health and public policy, with conflicts of interest and contradiction featuring as causes and consequences. These contradictions in public policy are especially evident in the case of tobacco. The advent of tobacco evoked mixed responses from a traditional society. Just as the symbolic nature of consumption is not identical among different individuals, groups or cultures, similarly the morality intrinsic to tobacco consumption varies. Tobacco has become a debatable issue in Mizoram as it is directly linked to the cultural practices. Moreover, apart from many other reasons, it is the main source of income for many lower socio economic class people. As a result, the control, reduction of demand and cessation of tobacco use is making a very slow progress.

In this century, residents of developed nations have experienced an epidemic of diseases that are caused, either primarily or partly, by tobacco use (Peto Ret al., 1992, DHHS, 1989). Developing countries will probably experience a similar epidemic if current trends in tobacco use continue (Lopez Ad et al., 1994). A report by the US Surgeon General (1988) concluded that cigarettes and other forms of tobacco produce dependence and that nicotine is the chemical which causes dependence. The World Health Organization (1993) and the American Psychiatric Association (1987, 1994) also recognize the dependence-producing properties of tobacco. Although nicotine is toxic and even fatal at high doses (Beeman and Hunter, 1937), most of the deleterious health consequences of tobacco use come from the more than 2,500 other chemicals in tobacco products and the 4,000 other chemicals in tobacco smoke (Dube and Green, 1984). When a person uses tobacco, many chemicals including nicotine is rapidly extracted. Nicotine alters levels of active neuroregulators and may be used to engage these neuroregulators because they produce temporary improvements in performance or affect. Specifically, acetylcholine, norepinephrine and vasopressin appear to enhance memory; acetycholine and beta endorphins can reduce anxiety and tension. Alterations in

dopamine, norepinephrine and opioids improve mood and people find that their performance of basic tasks improved when levels of acetylcholine and norepinephrine are high. Consequently, among frequent tobacco users, it increases concentration, recall, alertness, arousal, psychomotor performance, and the ability to screen out irrelevant stimuli. In the now outdated conceptualization of the problem, psychological dependency leads to psychological withdrawal symptoms such as irritability, insomnia, depression, anorexia, etc).

The total number of premature deaths caused by tobacco during the twentieth century has been estimated at about 100 million and, if current trends of tobacco use continue during the twenty-first century, the death toll is projected to go up to one billion. Worldwide, approximately 1.1 billion people ages15 and older smoke; 300 million live in developed countries, and 800 million in developing countries. About one-third of the world's adult's smoke, four million people die yearly from tobacco-related disease and one death every 8 seconds. If current trends continue, the toll will rise to 10 million by 2030, one death every 3 seconds (World Health Organization, 1999). The World Health Organization (WHO), which provides these estimates, also predicts that India will have the fastest rate of rise in deaths attributable to tobacco in the first two decades of the twenty-first century. Many of these deaths will occur in the productive years of adult life, as a consequence of an addiction acquired in youth. The compelling need to save many of these lives from falling prey to tobacco use addiction and the urgent imperatives of avoiding the huge health, economic, social and environmental burdens that would be imposed by tobacco on a nation that aspires for accelerated development. Tobacco use causes a wide range of major diseases which impact nearly every organ of the body.These include several types of cancers, heart diseases and lung diseases. The acute effects of nicotine also are important, having been implicated in sudden heart attack, death and stroke (Black, 1990). Cigarette smoking and other forms of tobacco use are contraindicated in patients with heart disease, hypertension, diabetes, chronic obstructive lung disease, and diseases of the gastrointestinaltract, for fear that nicotine and other components of tobacco will exacerbate existing illness as well as contribute to progressive pathogenesis, according to the U.S. Department of Health, Education, and Welfare (DHEW, 1979). Public health researchers have been substantiating these findings and discovering more and more damaging evidence about the disease.Practice of health compromising

behaviors is thought to be one reason that social class is so strongly related to most causes of disease and death (Adler et al., 1994). In virtually every region of the world, the poor consume tobacco more frequently than the affluent sections of the society. Among the estimated 4.2 million premature deaths worldwide from tobacco in 2000, 3.4 million were among men and 0.8 million among women (Mackay & Eriksen, 2002). Sex and gender differences in tobacco use have been the focus of numerous studies. It is increasingly recognised that men and women differ in relation to their reasons for smoking, levels of addiction to nicotine, and difficulties with cessation. Some of these differences may be attributed to social factors (gender) while others may be attributable to biological factors (sex) (Department of Women, Gender and Health, 2005). These sex and gender differences have not been fully explored in psychiatric populations

There are several good reasons to examine links between tobacco and behavioural measures like anxiety, depression, stress, coping and personality. The first is a theoretical one: if mental health problems are more likely to occur among those with substance use disorders, this raises important questions about the aetiology of mental disorders and of substance use disorders. The second is a public health issue: if it is the case that substance use and misuse is associated with other mental health problems, this has implications for service provision and for the well-being of members of the community. The final reason is a clinical one: if a person with a substance use problem is likely to have other mental health problems, then someone presenting for treatment for one problem may also require treatment for other mental health problems they are experiencing. This has implications for both assessment and for the efficacy of treatment for substance use problems if other problems go untreated.

Research has demonstrated consistently that tobacco users score higher on personality scales measuring a tendency to experience negative emotions and lower on scales indicative of the ability to constrain behavior. Over a decade ago, a major review concluded that tobacco users, compared with nonusers, were more likely to be high in traits such as depression, anxiety, anger, social alien- ation, impulsivity, sensation seeking, and psychoticism and low in traits such as conscientiousness and agreeableness (Gilbert & Gilbert, 1995). More recent reports demonstrated a link

between tobacco use and higher neuroticism, extraversion, hostility, aggression, novelty seeking, impulsiveness, excitement seeking, and sensation seeking and lower agreeableness, conscientiousness, self-discipline, and constraint (Calhoun, Bosworth, Siegler and Bastian, 2001; Whiteman, Fowkes, Deary, & Lee, 1997) with neuroticism demonstrating a consistent relationship with tobacco dependence (Breslau, Kilbey, & Andreski, 1993).

Nicotine dependence is associated with elevated risk for major depression and anxiety disorders and with personality traits such as neuroticism, extroversion and psychoticism. Neurotic adolescents are at heightened risk to begin using tobacco. Individuals who experience frequent affective distress and negative life events are more likely to shift from experimental to regular smoking (Koval et al., 2000; Orlando et al.; 2001). Tobacco may be used by such individuals as a means of regulating mood and coping with stress.

Consistent with previous research, measures of depression, general emotional distress, general perceived stress, and subjective stress ratings were positively related to weekly tobacco use, with the strongest association between depression and smoking/tobacco use (Kassel, 2000; Naquin & Gilbert, 1996). On some occasions, smoking may signal the desire to be alone and may indicate sad mood or depression (Nichter et al., 2006). That is, when upset, some college students may withdrawand engage in smoking as a solitary activity that does not involve other drug use.

The link between tobacco use and depression has also received a great amount of attention in the research literature (Breslau, 1995; Breslau et al., 1993; Covey, 1999; Glass, 1990; Glassman, 1993; Glassman, 1998; Glassman, Helzer, & Covey, 1990; Pomerleau, 1997). High rates of smoking and tobacco use have been found among those in contact with treatment services for depression (Glass, 1990; Glassman, 1993; Glassman, 1998; Hughes, Hatsukami, Mitchell, & Dahlgren, 1986). Epidemiological research conducted in the US on the prevalence of smoking among adults in the community has found that tobacco users had higher rates of depression (Anda et al., 1990; Breslau et al., 1991; Kandel, Davies, Karus, & Yamaguchi, 1986). Longitudinal studies have revealed an association between tobacco use, depression and anxiety among adolescents and young adults in both US (Breslau et al., 1991; Breslau, Kilbey, & Andreski, 1994) and Australian (Patton et al., 1998) samples.

Research involving twins has suggested that nicotine dependence and major depression may have common genetic causes (Kendler et al., 1993a).

Apart from depression, anxiety, stress and anger were all cited as triggers for smoking. It was common for smoking to be described as a learned reaction to mood disturbances, though it provided little relief. Smoking was described as a way of having some sense of control and was used to fill a void created by a lack of meaningful activities. These themes echo those found in previous qualitative research of depressed smokers in outpatient mental health services, where cigarettes were described as being a 'symbol of control' and 'a friend who gave security and companionship' (Lawn et al., 2002).

Epidemiological research has been conducted in the US on smoking among adults in the community (Anda et al., 1990; Breslau et al., 1991; Kandel et al., 1986), and longitudinal studies have examined tobacco use, depression and anxiety among young adults in the US (Breslau et al., 1991; Breslau et al., 1994) and Australia (Patton et al., 1998). These studies have found that depression and anxiety are more common among US adult smokers, and that young adult smokers are more likely to have symptoms of anxiety and depression.There is also evidence of a dose–response relationship between tobacco use and anxiety/mood disorders (Cardenas et al., 2002; Lasser et al., 2000). Cigarette smoking is the strongest risk factor for COPD (Global Initiative for Chronic Obstructive Lung Disease, 2005). Yet, to our knowledge, studies to date have not fully examined the potential role of cigarette smoking in the relationship between anxiety/mood disorders and COPD. As cigarette smoking is associated with both mood/anxiety disorders and COPD, it is possible that the link between anxiety/mood disorder and COPD is due to confounding or mediation by cigarette smoking. Previous studies that have examined the role of smoking in the relationship between anxiety/depression and COPD have adjusted only for current smoking. This is limited because cumulative smoking across one's lifetime is the exposure that is thought to contribute to COPD—not simply smoking in the past 12 months. To our knowledge, no studies to date have examined the potential confounding and/or mediating role of former smoking on the relationship between anxiety and depressive disorders and COPD.

Exposure to traumatic events is associated with increased tobacco use behavior (Feldner, Babson & Zvolensky, 2007). This association has been observed across exposure to several different traumatic event types, including combat (Beckham et al., 1995, 1997; Shalev, Bleich, & Ursano, 1990), physical and sexual assault (Acierno, Kilpatrick, Resnick, Saunders & Best, 1996; Acierno et al., 2000), and acts of terrorism (Pfefferbaum et al., 2002; Vlahov et al., 2002). Greater posttraumatic stress symptom levels are related to higher tobacco dependency levels (Beckham et al., 1995; Schnurr & Vielhauer, 1999). Similarly, traumatic event-exposed individuals with, versus without, associated psychopathology are more likely to be current smokers (Acierno et al., 1996), begin smoking (Breslau, Davis, & Schultz, 2003), smoke at higher rates (Beckham et al., 1997) and evidence greater puff volumes (which maximize smoke delivery) while smoking (McClernon et al., 2005). Financial pressure, family conflicts, and stress at work/school are identified as important contributing factors (Pearson, Phillips, He & Ji, 2002; Yip, 2001).

Posttraumatic stress disorder (PTSD) is one anxiety disorder associated with high rates of tobacco use (45% with PTSD vs. 23% in general population; Lasser et al., 2000). In addition, smokers with PTSD, compared with those without the disorder, smoke more cigarettes per day and are more dependent on nicotine (Babson, Feldner, Sachs-Ericsson, Schmidt & Zvolensky, 2008; Beckham et al., 1997) and people who develop PTSD after exposure to a traumatic event report increased smoking behavior compared with those who do not develop such symptoms (Breslau, Davis, & Schultz, 2003). The relationship between PTSD and smoking might be explained directly by the use of smoking to reduce PTSD symptoms (Beckham et al., 2005). Tobacco users with PTSD, compared with those without the disorder, are, in fact, more likely to report tobacco use in order to reduce negative affect (Beckham et al., 1995, 2005) and to endorse greater affective dysregulation and increased tobacco use behavior following exposure to traumatic stimuli (McClernon et al., 2005). In addition, the presence of PTSD was recently found to predict early relapse following a quit attempt (Zvolensky et al., 2008).

Although less work is available, elevated smoking and tobacco use rates also have been found in other anxiety disorders, including generalized anxiety disorder (GAD), SAD, and specific phobia (Breslau, 1995; Lasser et al., 2000). Lower

estimates have been found for individuals with obsessive-compulsive disorder (Baker-Morissette, Gulliver, Wiegel, & Barlow, 2004; Bejerot& Humble, 1999; McCabe et al., 2004). These findings suggest that tobacco may be due, in part, to emotion regulation difficulties and intense negative affect associated with GAD and SAD (Mennin, McLaughlin, & Flanagan, 2009).

Furthermore, Piasecki et al. (2007) reported that daily compared to nondaily tobacco users like smokers were more likely to cite coping with negative affect as a reason for tobacco use. Nichter, Nichter, Carkoglu, and TERN members (2007) found that using tobacco to alleviate distress was a common motivation for tobacco users, and that smoking cigaretteswas viewed as a nonverbal signal of stress, presumably with the goal of obtaining social support. All of these studies support links between stress/NA and tobacco.

Individual differences in personality traits may be important factors that underlie the development and maintenance of tobacco addiction (Kahler et al., 2010; Leventhal et al., 2012). Understanding the mechanisms through which personality traits increase vulnerability to persistent smoking behavior can lead to the development of novel smoking cessation treatments tailored to personality profiles. In addition, such information may advance theoretical models of tobacco addiction in psychologically vulnerable populations.

The prevention of tobacco use in children and adolescents requires a multiprongedapproach that targets the social environment, as well as individualbehaviors (Bonnie, 2001; Lantz et al., 2000; Lynch & Bonnie, 1994; U.S.Department of Health and Human Services, 1994a). Individual behaviour change strategies include school-based prevention programs, computer-basedsystems, and peer-based interventions (Lantz et al., 2000). Pediatricians andother health professionals also have an important role to play in preventingsmoking initiation (Hymowitz, Schwab and Eckholdt, 2001). Sussman, Lichtman, Ritt and Pallonen (1999) reported that average reductions in smokingonset among youth generated by school-based prevention programs wasabout 6%, with a range of 0 to 11%. Programs that focused on teaching youngpeople *resistance* skills to deal with social and other influences to smoke weremost successful and had a longer lasting impact (Lantz et al., 2000). At theenvironmental level, mass media campaigns and policies aimed at

restrictingaccess to cigarettes, increasing the price of cigarettes, restricting cigaretteadvertising, and creating smoke-free facilities decrease smoking initiation inyoung people (Lantz et al., 2000).Community interventions target multiple systems, institutions, or channelssimultaneously to influence individual behaviors and community norms.The results of a small number of controlled trials of community interventionattest to their ability to have a positive effect on youth smoking behavior. Theeffectiveness of school-based interventions is enhanced when they are including a broad-based community effort and the impact of community interventionsmay be enhanced if they are combined with strong advocacy, taxation, media, and policy interventions (Lantz et al., 2000).

Values, which influence conduct, change over time as the social milieu is re-configured by social, economic and cultural shifts that occur over time, both within and across societies. This holds true of tobacco consumption as well. As traditional values slacken their stranglehold in rural societies and are rapidly substituted by increasingly modern codes of behaviour in urban societies, the sociocultural influences that encourage or discourage tobacco use are altering. These requiredto bestudied and tracked by advocates of tobacco control who must not only identify but also influence these processes to curb tobacco consumption. Otherwise, they would leave the field open to the tobacco industry which avidly studies these sociocultural indicators and their determinants to manipulate them to its advantage. The paucity of studies in this area is a cause for concern but should also be stimulus for concerted action by social scientists and health professionals (Reddy and Gupta, 2004).

Unlike the traditional Indian family in the past, the use of tobacco is not considered a taboo in Mizoram hence people who smoke or chew tobacco do it freely in public places.In the traditional Mizo society, tobacco and women have been associated as part of a social custom which requires the housewife to serve 'tobacco water' to the husband as well as to visitors. Tobacco water has been in use since the nineteenth century; definite recording of its use is available since 1907. Men and women alike sip tobacco water although in the past it was said to be predominantly used by women. Traditionally, tobacco water was offered to guests/ visitors both at family and social levels and it was considered very rude to omit this greeting. Tobacco water was one of the essential items especially in rural

parties. A family generally owned three tobacco water flasks, one carried by the husband, one by the wife and a spare one kept in the house. No grown man or woman went around without a flask. This was common feature among the Lakhers (tribal community in Mizoram) in both urban and rural areas. Men as well as women smoke tobacco using different types of pipes (*vaibel* and*tuibur*, respectively)(Thanga, 1978).The*tuibur* has a water receptacle, through which smoke is drawn. The nicotine- rich 'tobacco water' that remains in the bowl after a woman smokes her pipe is used as a favoured beverage to serve family members and visitors. The women are, therefore, expected to smoke frequently and produce sufficient quantities of the tobacco water. This is stored in a hollow gourd and offered as sips to others.

The reputation of a woman as a housewife and as a hostess is often dependent on her ability to serve adequate amounts of nicotine water. During the process of courting, the girl offers tobacco water to the boy. If the boy refuses, it is understood that he has no interest in the girl.Indeed; the ability of a young woman to make and serve tobacco water has been an important criterion during bride selection. For that reason, even young girls are taught to smoke to attain a desired level of proficiency in making and serving tobacco water. The Mizos are now a highly literate society and the commercial availability of bottled tobacco water are making this custom less common now. For that reason, even young girls are taught to smoke to attain a desired level of proficiency in making and serving tobacco water (Chatterjee, 1975). Parents actually introduce the traditional smoked form of tobacco '*Zozial*' to their children and encourage its use as a mosquito repellant while working in the rice fields (Siama, 1978; Sangkima, 1992; and Perry, 1976). Till today, majority of the Mizo population still use tobacco, it also acts as an important socializing agent. As a result, Mizoram has one of the highest prevalence rates of tobacco use in India where 73.6% male and 16.1% female use smoke forms of tobacco and 83.1% male and 60.8% female use smokeless forms of tobacco. Moreover, it has the highest percentage of cancer cases in India. It is assumed that the major occurrence of these diseases is due to the high consumption of tobacco by the people. Although there are no satisfactory studies supporting this, a close look at the high prevalence rate of both tobacco and its induced diseases in the State, it is very likely that tobacco is the major contributing factor (NFHS-3, 2005-2006).

Patently, sociocultural factors are crucial in determining who consumes tobacco, when, where, how and why. Tobacco use is a culturally accepted behavior among the Mizo which can partly be contributed to the limited information on tobacco itself, particularly the information on the relationship between psychological factors and tobacco use among this population. From various studies, it is now evident that tobacco use behavior is not just confined to societal practices or influence; different psychological variables are responsible for an individual's tobacco use. Tobacco has become a major ongoing concern; the reason for its high prevalence could be any of the mentioned factors – biological, individual psychological components and psychosocial factors. To tackle the problem, it is important to understand the psychological variables underlying the use of tobacco, why certain people are addicted while others are not and why the prevalence are increasing in some places while its decreasing in other places. Considering the enormous health complications associated with tobacco use, it is of utmost importance to understand the factors leading to its use and to plan strategies to reduce its intake. This is especially relevant for the developing state like Mizoram, where tobacco use continues to be common notwithstanding the recognition of harmful consequences of its usage. This study will review the patterns of tobacco use in Mizoram, its prevalence in Mizoram population, role of physiological, psychosocial and psychological factors in initiation and prevention, and the steps taken to control its use.The present study will also try to highlight the level of tobacco dependency with its relation to different psychological variables that may contribute to a better understanding of the theoretical constructs and throw some light on why so many Mizo people use tobacco. The findings of the proposed study will be the first endeavor; it will not only satisfy academic interest but it is also expected to provide theoretical basis for suggesting the prevention, cessation and intervention of tobacco use among the target population.

Given to the theoretical and methodological foundation provided in this chapter and coupled with the previous chapter, the following objectives were framed for the present study.

Objectives:

1) To examine the relationship between gender (male and female) and various psychological variables (personality, stress, coping, anxiety and depression).

2) To ascertain the relationship between levels of tobacco dependence for smokers, smokeless tobacco users, non-users and the psychological variables (personality, stress, coping, anxiety and depression).

3) To determine the predictability of the psychological variables from the level of tobacco dependency.

4) To assess the independent and interaction effects of gender and level of tobacco dependency on the psychological variables (personality, stress, coping, anxiety and depression).

Hypotheses:

Given the theoretical foundations pertaining to tobacco use and behavioral parameters, the following hypotheses has been formulated for the present study:

1) It is expected that there will be gender (male and female) differences on psychological variables (personality, stress, coping, anxiety and depression).

2) Neuroticism and extraversion (of Personality Scale) score may be higher in female than male, highest among high dependent smokers and smokeless tobacco users, followed by low dependent smokers and smokeless tobacco users, and lowest among non-users, converse scores may happen.

3) Perceived stress may be higher in female than male, highest among high dependent smokers and smokeless tobacco users, followed by low dependent smokers and smokeless tobacco users, and lowest among non-users.

4) It is expected that female may be higher in Avoidance-Oriented coping and low in Task-Oriented coping and Emotional-Oriented coping than male and same trend is expected on high dependent smokers and smokeless

tobacco users, followed by low dependent smokers and smokeless tobacco users, and lowest among non-users.

5) Anxiety and depression may be higher in female than male, highest among high dependent smokers and smokeless tobacco users, followed by low dependent smokers and smokeless tobacco users, and lowest among non-users.

6) It is expected that interaction effects of gender (male and female) and level of tobacco dependency will be present on the psychological variables (personality, stress, coping, anxiety and depression) but exploratory in nature.

The methods and procedure that were aimed to be incorporated to achieve the objectives of the study are outlined in the next chapter on 'Chapter – III: Methods and procedure'

Chapter- III
METHODS AND PROCEDURE

Sample:

Three Hundred (300) Mizo adults (150 males and 150 females) with their age ranging between 40-50 years were randomly selected on the basis of multi stage sampling procedure from Aizawl City, the capital of Mizoram. Since a sample of true nature is desired, tobacco use have the highest prevalence among the age group of 40-50 years (Srivastava et al, 2004), hence, they were regarded as true representative for the present study. Out of 300 participants, 30 each were in '*high tobacco dependent smokers'*, '*low tobacco dependent smokers', 'high dependent smokeless tobacco users', 'low dependent smokeless tobacco users'* and *'non-users'* (*Other non-smokers'* and '*Other non-users'* which include both those who have never used any forms of tobacco and those who have used too little in terms of frequency and duration to be regarded as ex-users, as classified by WHO, 1983) group. The samples for 'high dependent' (above 50th percentile) and 'low dependent' (below 50^{th} percentile) for both smokers and smokeless tobacco users were screened out on the basis of the severity of tobacco use according to their scores by using the Fagerstrom Test for Nicotine Dependence(Heatherton et al., 1991). The 'non-user' samples wereidentified through scheduled personal interview.

With the objective to equate/match the sample and obtain a representative sample, a number of background information of the subject like age, gender, marital status, educational qualification, occupation, average monthly income, details of tobacco use (type, age of onset, average number of cigarettes/bidis/sachets used per day, number of years of regular tobacco use, average number of tobacco smoked or chewed per day in the last one month), severity of tobacco use, family history of tobacco use in first-degree relatives were recorded. In the desire to mention the details of tobacco use which is not included in the design, it was included as covariate in the background demographic variables.

Psychological measures of personality, anxiety, depression, stress, and coping test questionnaires were administered to determine its relationship withtobacco dependency among Mizo Adults. 'Gender' was included in the design, as tobacco prevalence is both high among males and females in Mizoram.

Procedure:

The selected psychological measures:(a)Anxiety (Beck Anxiety Inventory Test: Beck & Steer, 1990), (b) Depression (Beck Depression Inventory–II: Beck et al., 1996), (c)Stress (Perceived Stress Scale: Cohen & Williamson, 1988), (d) Coping (Coping Inventory for stressful Situations: Endler& Parker, 1999),(e) Personality (Eysenk Personality Questionnaire-Revised: Eysenck, H.J., &Eysenck, S.B.G., 1980a) and (d) Nicotine dependence (Fagerstrom Test for Nicotine Dependence: Heatherton et al.,1991) were originally English, which were translated into Mizo language as the participants speak in Mizo and then back to English language to confirm the reliability of the translated scale. The original and translated psychological tests were compared by three language experts who were both well versed in English and Mizo. Through pilot study the translated scales are confirmed to be reliable (.83) for the present study.

Firstly, the researcher obtained the necessary consents, rapport and careful explanations of instructions for completing the questionnaires were done; subjects required filling out the questionnaire sets anonymously in order to minimize the potential influence of social desirability response sets. The background demographic sheets will then be distributed and filled up by each subject with assured confidentiality. Each testing session will last for approximately one hour. Then, the researcher asked the subjects to fill up the demographic profile which was then only administered to the participants. The selected participants were carefully given instructions that are required for the conduction of the psychological tests. The participants were asked to fill up the demographic profile first. The participants were given the questionnaire sets after cautious preparation and were requested to fill up the questionnaire sets completely and also gave them assurance that confidentiality and anonymity of the subjects will be maintained with that security they should not hesitate to give free and unbiased information.

The subjects were ensured confidentiality regarding their response patterns, they were requested to respond unanimously so as to take care of the components of social desirability, biases in the response mode(s) and pattern(s) on each measure. After successful completion of all questionnaires, scoring was done and close examination was done for inferential conclusions of the findings.

The participants were both tested under individual and group condition in the presence of the researcher. After completion of the test, from the data collected the researcher carefully checks the response sheets and rejected those that are incomplete and those that were highly differed from other participants. Finally, after screening the responses of large participants, 300 participants were selected for analyses.

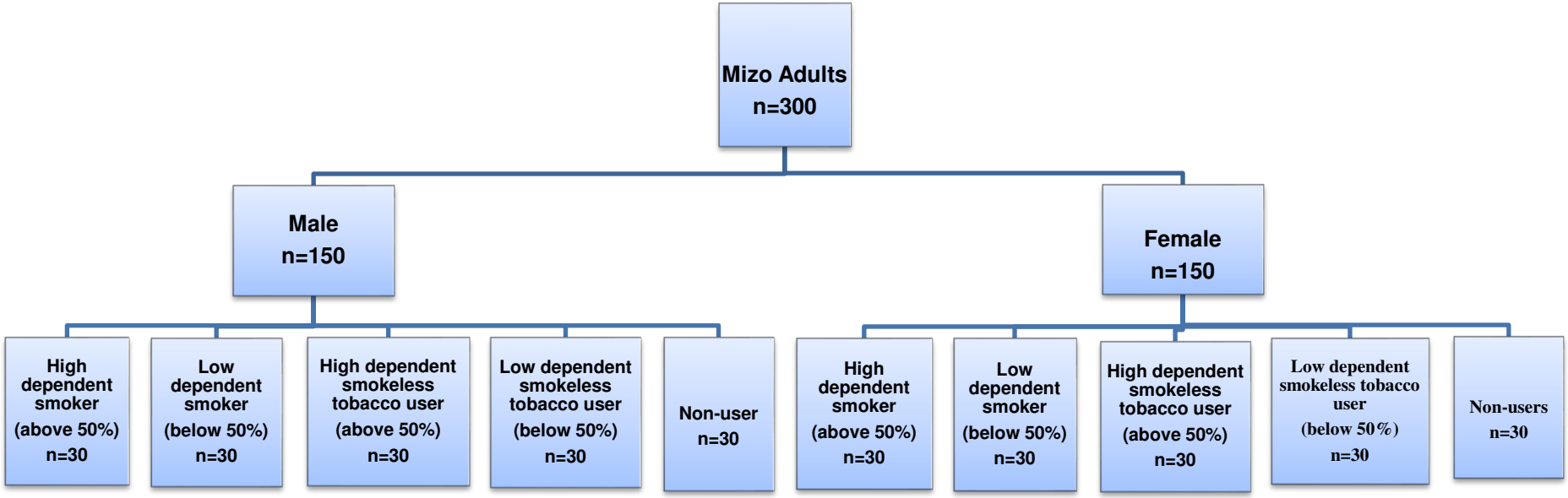
Design of the Study:

The study was designed with manifold objectives keeping in view of the objectives of the study; the methodological refinements are aimed in a step-wise manner. Firstly, comprehensive scores on the scales or sub-scales of the behavioral measures are arranged in order for the psychometric check(s) of the applicability of behavioral measures for measurement in the project population.

Secondly, the study incorporates a two way classification of variables, the independent variables are 'gender' (male and female), and levels of tobacco dependencey ('high tobacco dependent smokers', 'low tobacco dependent smokers', 'high dependent smokeless tobacco users', and 'low dependent smokeless tobacco users' and 'non-users') while the dependent variables are the psychological measures of personality, anxiety, depression, stress and coping styles, the independent and interaction effects of 'Gender' and 'levels of tobacco dependency' on the behavioral measure with the demographic profiles as the covariate will be elucidated with the 2X5 (2 gender X 5 levels of dependency) factorial design (Figure- 1.1). The 2X5 factorial design was imposed on the dependent measures with the participants equated and matched for the demographic variables in each cell of the main design.

Finally, the predictability of the symptoms of psychological problems from other behavioral measures in the cells of the main design was highlighted employing correlational design.

Figure 1.1: Showing the design (2x 5 factorial designs).



Psychological Tools:

To achieve the objectives, the study aims to incorporate a separate group design to elucidate the psychometric adequacy of the behavioral measures of (a) Anxiety (Beck Anxiety Inventory Test: Beck & Steer, 1990), (b) Depression (Beck Depression Inventory–II: Beck et al., 1996), (c)Stress (Perceived Stress Scale: Cohen & Williamson, 1988), (d)Coping (Coping Inventory for stressful Situations: Endler& Parker, 1999), (e) Personality (Eysenk Personality Questionnaire-Revised: Eysenck, H.J., &Eysenck, S.B.G., 1980a)and (d) Nicotine dependence (Fagerstrom Test for Nicotine Dependence: Heatherton et al.,1991) for measurement purposes in the target population – the Mizo. The behavioural measures are described hereunder to make lucid the behavioral components that are aimed to be highlighted.

(a)<u>Demographic Profiles:</u>

A number of background information of the subject like age, gender, marital status, educational qualification, occupation, average monthly income, details of tobacco use (type, age of onset, average number of cigarettes/bidis/sachets used per day, number of years of regular tobacco use, average number of tobacco smoked or chewed per day in the last one month), severity of tobacco use, family history of tobacco use in first-degree relatives wererecorded. In the desire to mention the details of tobacco use which is not included in the design, it was included as covariate in the background demographic variables.A specimen copy of the Demographic in English and Mizo language may be seen at Appendix-I & II.

(b) <u>Beck Anxiety Inventory (BAI; Beck, A. T. & Steer, R. A., 1990)</u>:

The BAI evaluates both physiological and cognitive symptoms of anxiety and item overlap with other self report depression inventories is minimized. The BAI consists of 21 items; each item is descriptive of a symptom of anxiety and is rated on a scale of 0 to 3. It can be administered verbally by a trained interviewer or can be self administered. The respondent can select an answer from four choices: - 'Not at all', 'mildly ("but it doesn't affect me much")', 'Moderately ("it was unpleasant at times")', and 'Severely ("it bothered me greatly")'. The highest possible score is 36. A score that is in the range of 0 to 7 reflects very low anxiety levels. Any score that is higher than 26 indicates a very high level and serious case of anxiety. A

specimen copy of the BAI in English and Mizo language may be seen at Appendix – III & IV.

(b) Beck Depression Inventory–II (BDI-II; Beck, A. T., Steer, R. A., Brown, G.K., 1996):

The BDI–II consists of 21 items to assess the intensity of depression in clinical and normal patients. Each item is a list of four statements arranged in increasing severity about a particular symptom of depression. It is scored by summing the ratings for the 21 items. Each item I rated on a 4 point scale ranging from 0 to 3. The maximum total score is 63. The cutoffs used differ from the original: 0–13: minimal depression; 14–19: mild depression; 20–28: moderate depression; and 29–63: severe depression. Higher total scores indicate more severe depressive symptoms.A specimen copy of the BDI-IIin English and Mizo language may be seen at Appendix –V & VI.

(c) Perceived Stress Scale (PSS; Cohen, S., & Williamson, G., 1988):

The Perceived Stress Scale is a 10-item self report questionnaire that measures persons' evaluation of the stressfulness of the situations in the past month of their lives. PSS-10 scores are obtained by reversing the scores on the four positive items, e.g., 0=4, 1=3, 2=2, etc. and then summing across all 10 items. Items 4, 5, 7, and 8 are the positively stated items. Scores can range from 0 to 40, with higher scores indicating greater stress.A specimen copy of the PSS in English and Mizo language may be seen at Appendix – VII& VIII.

(d) Coping Inventory for Stressful Situations (CISS: Endler, N.S. & Parker, D.A., 1999):

The CISS is a self-report paper-and-pencil measure of coping, consisting of 48 items. There is both an adult form and an adolescent form. Sixteen items assess Emotion-Oriented coping. There are two subscales for the Avoidance-Oriented scale; Distraction (eight items), and Social Diversion (five items). (The three remaining items for the Avoidance scales are not scored for these two subscales). Each item is rated on a 5-point frequency scale ranging from (1) "Not at all" to (5) "Very much".

A specimen copy of the CISS in English and Mizo language may be seen at Appendix –IX & X.

(e)Eysenck Personality Questionnaire-Revised (EPQ-R; Eysenck, H.J. &Eysenck, S.B.G., 1980a):

The Eysenck Personality Questionnaire- Revised (EPQ-R) is a scale designed to give rough and ready measure of three important personality dimensions: Psychoticism, Extraversion, and Neuroticism which are measured by means of 90 questions. The Lie scale is also measured, EPQ-R is a 2-point scale anchored by the terms 'Yes' or 'No'. The raw scores should be converted into sten scores from Table 9a and 9b of the manual, and the sten scores are distributed over ten equal intervals of standard scores point from 1 to 10. The score of 5-6 denote average strength of the factor, scores above 6, i.e. from 7-10, express gradually the greater strength of the factor and scores below 5, i.e. from 1-4, indicate gradual decrease of strength. In Table 10 of the EPQ-R Manual, conversion of stens to percentile is presented.A specimen copy of the EPQ-R in English and Mizo language may be seen at Appendix – XI & XII.

(f) The Fagerstrom Test for Nicotine Dependence (FTND: Heatherton, T.F., Kozlowski, L.T., Frecker, R.C., Fagerstrom, K.O., 1991):

The FTND consist of two sub-scales, i.e. Fagerstrom Addiction Scale for Smokers and Fagerstrom Questionnaire for Smokeless tobacco users. The scale for smokers is a 6-item questionnaire which measures the smokers' level of nicotine dependence; the highest possible score is 10. The closer to zero the score, the less dependent the smoker is and the closer to 10 the score, the stronger the dependence is. The questionnaire for smokeless tobacco user is a 9-item scale which measures the tobacco users' level of dependence on smokeless tobacco. The highest possible score is 16. The closer to zero the score, the less dependent, the closer to 16 the score, the more strongly is the dependence on tobacco.A specimen copy of the FTND in English and Mizo language may be seen at Appendix –XIII to XVI**.**

Statistical Analyses:

Keeping in view of the problems of the study, the methodological refinements were done in a step-wise manner. Firstly, the preliminary psychometric analyses of the behavioural measures on the sampled equated and/or matched on the demographic variables included the statistical analyses of psychometric adequacy including: item-total coefficient of correlation, Cronbach alpha and split-half reliability coefficient and inter-scale relationships as the psychological of their proven psychometric adequacy cannot be assumed to carry their psychometric properties when transported and applied in any other cultural setting.

The analyses of the preliminary psychometric analyses subscribes to the admonition of researchers in culture specific and cross-cultural studies: that scale constructed and validated for measurement of theoretical construct in a given population when taken to another cultural milieu may not be treated as reliable and valid unless specific checks are made (Berry, 1974; Eysenck, &Eysenck, 1983; Witkin, et al., 1975), and that cultural researches employing the derived-etic approach assume that each group that occupies an ecological niche is equivalent to that of the other and the study is free of systematic bias (Pootinga, 1989).

Secondly, 2 x 5 factorial design (2 Gender x 5 levels of tobacco dependency) with appropriate Post-hoc mean comparison was employed to highlight the independent and interaction effects of the independent variables on the dependent measures. The analyses incorporated preliminary check of the assumptions underlying the analysis of variance for the interpretability of the finding. The analyses also included the ANOVA with repeated measure to account for the introspective and retrospective responses.

Thirdly, multiple regression analyses were employed for the prediction of the psychological symptoms from the other behavioural measures for clarity and precision.

The responses of the subjects were computerized and analyzed employing statistical software by following the objectives set forth for this study. The overall analyses of results are presented and discussed in the following chapters.

Chapter- IV
RESULTS AND DISCUSSION

Subject-wise scores on the specific items of the behavioral measures of: (i) Beck Anxiety Inventory Test (BAI, Beck & Steer, 1990); (ii) Beck Depression Inventory–II (BDI-II, Beck et al., 1996); (iii) Perceived Stress Scale (PSS, Cohen & Williamson, 1988); (iv)Coping Inventory for Stressful Situation (CISS, Endler& Parker, 1999); (v) Eysenck Personality Questionnaire-Revised (EPQ-R, Eysenck *&* Eysenck*,* 1991)were prepared for the whole samples-Male and Female 'high tobacco dependent smokers', 'low tobacco dependent smokers', 'high dependent smokeless tobacco users', 'low dependent smokeless tobacco users' and 'non-users'.

Psychometric Properties of the Behavioural Measures

Psychometric analyses of the behavioral measures included the analysis of (i) item-total coefficient of correlation (as an index of internal consistency and item validity) was ascertained for the scales/subscales of the behavioral measures with the criterion of items showing item-total coefficient of correlation ≥.01 for the whole sample to be retained for further analysis, (ii) Reliability coefficients (Cronbach alphas & Split-half)of the specific subscales, (iii) inter-scale relationships (in the instances where there were two or more sub-scales/ sub-factors). Following the broad format of analysis, the psychometric properties of the five classes of behavior measures of (i) anxiety, (ii) depression, (iii) stress, (iv) coping styles and (v) personality were analyzed by employing Microsoft Office Excel 2007 and IBM-SPSS, version 20.

The preliminary psychometric analyses over the level of analyses for each of the specific items and scales/subscales are determined with the objectives to ensure further statistical analyses, and the results are presented in Table – 1 showing the means, standard deviations of the scales/subscales of the behavioral measures of Beck Anxiety Inventory Test (Beck. & Steer, 1990), Beck Depression Inventory–II (Beck et al., 1996), Perceived Stress Scale (Cohen& Williamson, 1988), Coping Inventory for stressful situation (Endler& Parker, 1999) and Eysenck Personality Questionnaire-Revised *(*Eysenck *&* Eysenck*,* 1991).The preliminary analyses of the psychometric properties of the behavioral measures was computed in view of the fact that scale constructed and validated for measurement of theoretical construct in a given population when taken to another cultural milieu may not be treated as reliable and valid unless specific checks are made (Witkin& Berry, 1975).

Table – 1: Mean, Standard Deviation ofMale and Female 'high dependent', 'low dependent' smokers, smokeless tobacco users and non-users on the measures of the dependent variables.

Gender	Levels	Types	stats	BAI	BDI -II	PSS	CISS (T)	CISS (E)	CISS (A)	EPQR (P)	EPQR (E)	EPQR (N)
Male	**High Tobacco dependent**	**Smoker**	Mean	52.7	51.7	40.3	45.6	58.3	52.4	13.1	9.4	9.8
			SD	1.60	2.03	1.02	5.62	4.33	4.20	3.74	3.14	3.07
		Smokeless	Mean	47.8	47.5	37.4	46.2	46.2	48.0	11.4	5.97	6.8
			SD	1.93	2.80	1.19	3.53	3.53	3.30	3.30	2.33	3.14
	Low Tobacco dependent	**Smoker**	Mean	45.7	45.7	34.1	52.9	44.3	43.9	10.1	5.27	5.00
			SD	1.47	1.95	1.52	3.30	4.81	3.92	3.03	2.73	2.23
		Smokeless	Mean	41.6	41.0	30.6	58.3	37.6	42.6	9.90	4.90	5.33
			SD	1.33	1.78	1.81	4.33	5.12	5.25	2.99	2.68	2.64
	Non user	**Non user**	Mean	35.2	35.2	27.5	61.4	27.8	38.7	5.50	4.93	6.90
			SD	1.53	1.59	1.74	2.94	4.28	3.45	1.89	3.20	2.47
Female	**High Tobacco dependent**	**Smoker**	Mean	56.8	54.5	42.9	27.8	61.6	68.7	14.7	10.7	11.4
			SD	1.52	3.11	.83	4.27	2.88	3.46	2.14	1.54	2.14
		Smokeless	Mean	51.5	50.3	38.2	34.2	52.9	63.6	12.8	10.2	10.4
			SD	1.66	1.18	1.84	3.73	3.30	2.28	3.20	2.31	2.36
	Low Tobacco dependent	**Smoker**	Mean	48.2	46.6	35.7	35.6	45.0	59.1	10.7	8.73	9.43
			SD	2.15	1.09	1.88	5.12	5.47	3.30	3.18	2.92	2.79
		Smokeless	Mean	43.2	43.5	31.6	41.8	41.8	56.1	8.13	6.93	7.60
			SD	1.05	1.25	2.42	5.68	5.68	2.46	3.00	2.10	2.77
	Non user	**Non user**	Mean	38.7	39.3	31.4	44.8	34.2	52.8	7.90	6.40	7.07
			SD	1.01	2.18	1.35	4.57	3.73	3.43	2.04	2.51	3.01
Total Gender	**Male**		Mean	44.6	44.2	34.0	52.9	52.9	42.8	45.1	9.98	6.10
			SD	6.11	6.06	4.83	7.49	7.49	11.0	6.21	3.93	3.28
	Female		Mean	47.7	46.9	35.9	37.2	37.2	47.1	60.0	10.8	8.59
			SD	6.49	5.63	4.67	7.56	7.56	10.3	6.36	3.79	2.86

Total levels of Tobacco dependency	**HighTobacco dependent**	Mean	52.2	51.0	39.7	38.5	38.5	54.8	58.2	12.9	9.08
		SD	3.60	3.48	2.49	8.92	8.92	6.81	8.98	3.33	3.01
	LowTobacco dependent	Mean	44.7	44.2	33.0	47.7	47.7	42.2	50.4	9.71	6.46
		SD	2.93	2.67	2.78	9.56	9.56	5.98	8.26	3.16	3.00
	Non user	Mean	37.0	37.2	29.4	53.1	53.1	31.0	45.7	6.70	5.67
		SD	2.17	2.80	2.50	9.18	9.18	5.12	7.90	2.29	2.95
Total types of tobacco	**Smoke**	Mean	50.8	49.7	38.3	40.9	40.9	52.3	56.0	12.1	8.53
		SD	4.59	4.23	3.79	10.4	10.4	8.94	9.87	3.56	3.31
	Smokeless	Mean	46.0	45.6	34.4	45.1	45.1	44.6	52.6	10.5	7.01
		SD	4.19	4.05	3.86	9.77	9.77	7.24	8.72	3.54	3.08
	Non user	Mean	37.0	37.2	29.4	53.1	53.1	31.0	45.7	6.70	5.67
		SD	2.17	2.80	2.50	9.18	9.18	5.12	7.90	2.29	2.95

Figure 2.1: Column graph showing mean scores of 'Gender- male and female' of the whole samples on the measures of the dependent variables.

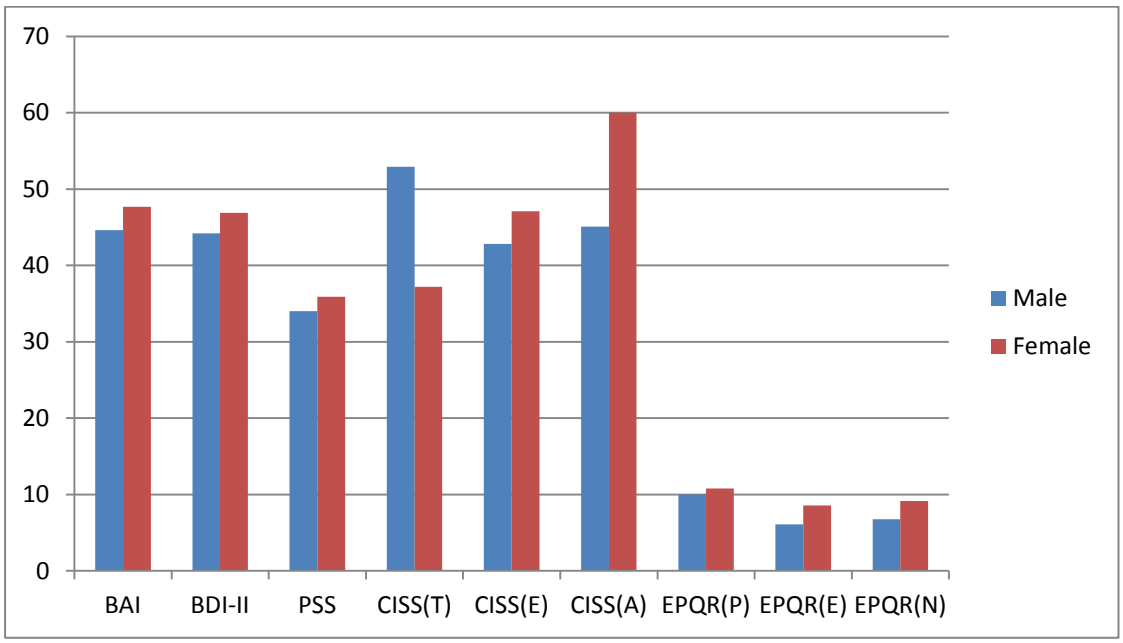


Figure 3.1: Column graph showing mean scores of levels of 'tobacco dependency - high dependent, low dependent and non-user' of the whole sample on the measures of the dependent variables**.**

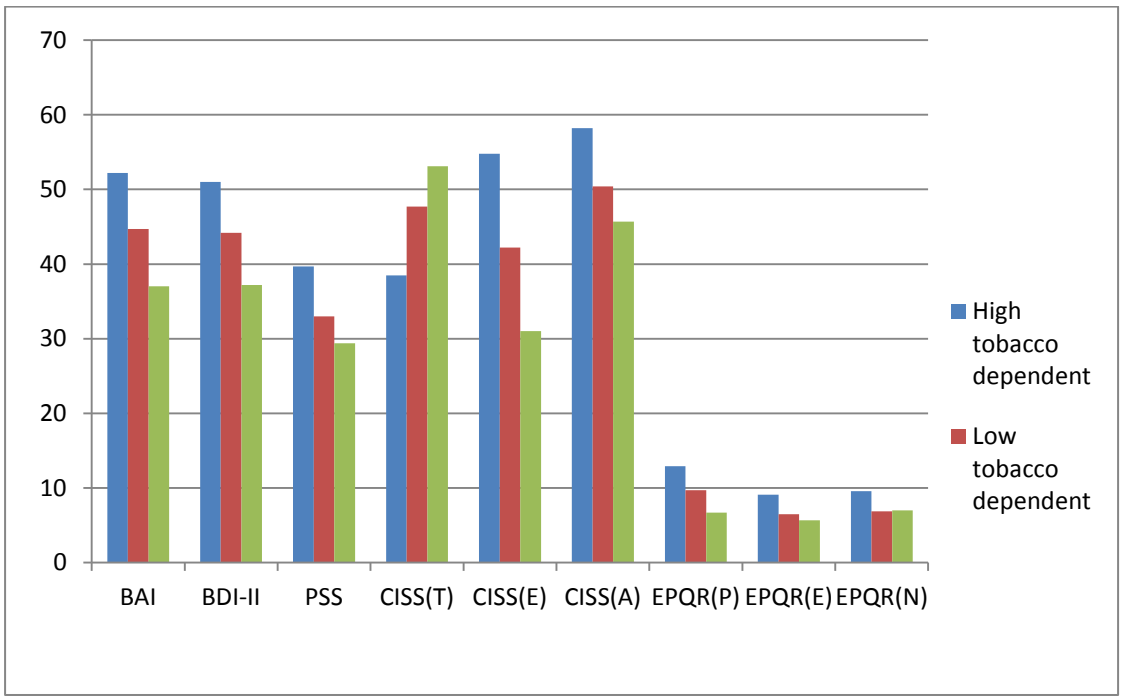
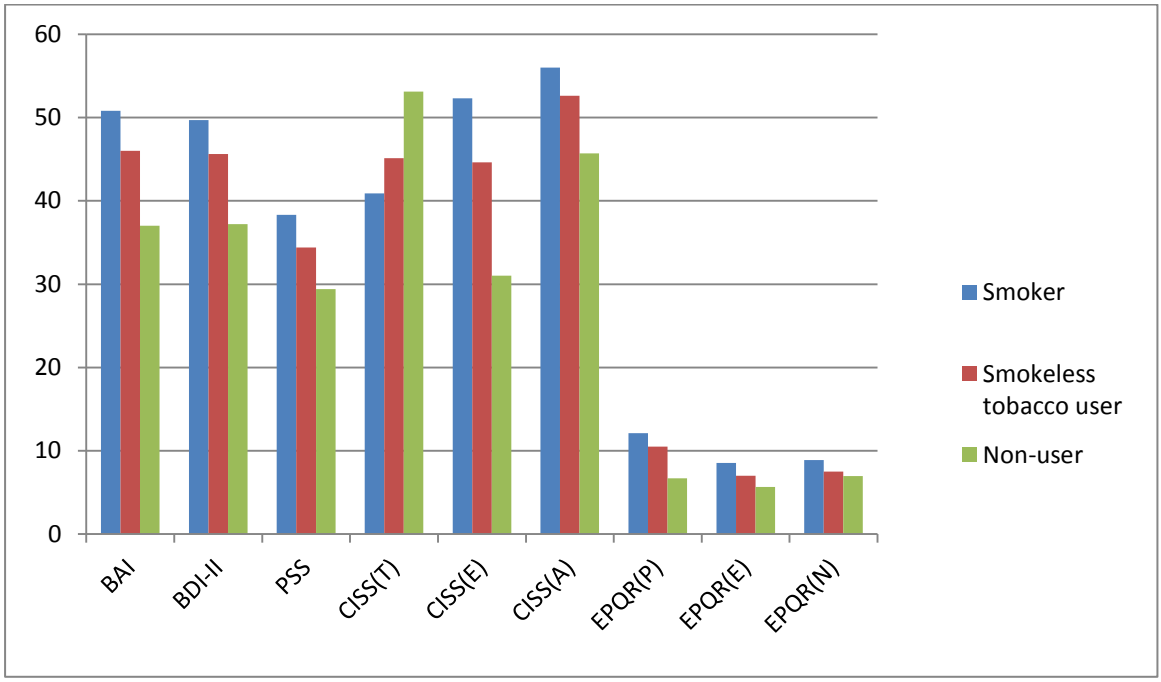


Figure 4.1: Column Graph showing mean of 'types of tobacco user – smoker, smokeless tobacco user and non-user' of the whole sample on the measures of the dependent variables.



The mean and standard deviation values for 'male and female 'high tobacco dependent smokers', 'low tobacco dependent smokers', 'high dependent smokeless tobacco users', and 'low dependent smokeless tobacco users' and 'non-users' on the behavioral measures are shown in Table - 1

The psychometric properties ofbehavioral measures were computed to confirm to the earlier findings, which further confirmed the adequacies of the psychometric properties of the selected scales for measurement purposes for the present study.The item-total coefficient of correlation (as an index of internal consistency and item validity) was ascertained for the scales/subscales of the behavioral measures as shown in Table – 3. The reliability coefficients (Cronbach Alphas and Split half) of specific scales/subscales of the behavioral gamut were also computerized. The preliminary psychometric analyses for each of the specific items and scales/subscales are determined with the objectives to ensure further statistical analyses, and the results are presented in Table -2.

The mean scores of 'Gender' (Male and Female) on the dependent variables (BAI, BDI-II, PSS, CISS (T), (E), (A) andEPQ-R (P), (E), (N) was calculated. Figure 2.1 shows the mean scores of 'Gender' (Male and Female) of the whole samples on

the dependent variables depicting that Female scored higher on the dependent measures like BAI (Anxiety), BDI-II (Depression), PSS (Perceived Stress), CISS (Emotional oriented and Avoidance oriented), EPQ-R (Psychoticism, Extraversion and Neuroticism) and score the lowest on CISS (Task oriented coping) which shows that females are higher on these behavioural measures as compared to Males and Males scored higher on CISS (Task oriented coping) showing they are higher on this behavioural measure as compared to Females. Figure 3.1 shows the mean scores of 'Levels of tobacco dependency' (high tobacco dependent, low tobacco dependent and non-users) of the whole samples on the dependent variables depicting that high tobacco dependent scored highest on all the dependent measures except CISS (task oriented coping) as compared to Low dependent smokeless tobacco users and Non-users and Non-users depict highest scores on CISS (task oriented coping). Figure 4.1 shows the mean scores of 'Types of tobacco user' (smoker, smokeless tobacco user and non-users) of the whole samples on the dependent variables depicting that Smokers scored highest on all the dependent measures except CISS (Task oriented coping) as compared to Smokeless tobacco users and Non-usersand Non-users depict highestscore on CISS (Task oriented coping).

Table – 2: DescriptiveStatistics for the scales and subscales of the behavioral measures (BAI, BDI- II, PSS, CISS and EPQ-R) showing reliability (alpha and split half), Skewness and Kurtosis for the whole samples.

Statistics		**Anxiety**	**Depression**	**Perceived stress**	**Coping styles**			**Personality**		
					Task oriented	**Emotional oriented**	**Avoidance oriented**	**Psychoticism**	**Extraversion**	**Neuroticism**
Reliabilities	**Alpha**	.84	.72	.79	.79	.79	.86	.54	.57	.54
	Split half	.73	.69	.79	.69	.69	.82	.66	.56	.53
Skewness		-.02	-.12	.02	.09	-.04	-.01	.10	.09	.04
SE		.14	.14	.14	.14	.14	.14	.14	.14	.14
Kurtosis		-.77	-.69	-.95	-.84	-.75	-.75	-.81	-.84	-.83
SE		.28	.28	.28	.28	.28	.28	.28	.28	.28

The reliability coefficient (Cronbach Alpha and Split half) of the scales/subscales of the behavioural measures of Beck Anxiety Inventory Test (Beck, & Steer, 1990), Beck Depression Inventory–II (Beck et al., 1996), Perceived Stress Scale (Cohen& Williamson, 1988), Coping Inventory for stressful situation (CISS, Endler& Parker, 1999) and Eysenck Personality Questionnaire-Revised (Eysenck *&* Eysenck*,* 1991) with reliability ranging from .54 - .84 of alpha reliability and .53 - .82 for Split half reliability (Table - 2).

The reliability coefficients emerged to be strong indicating the dependability of the test scales for measurement purposes in the project population (Mizo). In sum, the Item-Total coefficient correlation, the reliability coefficients (Cronbach alpha and Split half), and the Inter-scales/subscales of Beck Anxiety Inventory Test (Beck, & Steer, 1990), Beck Depression Inventory–II (Beck et al., 1996), Perceived Stress Scale (Cohen& Williamson, 1988), Coping Inventory for stressful situation (Endler& Parker,1999)and Eysenck Personality Questionnaire - Revised Eysenck & Eysenck, 1991) are conforming to the findings reported in literature (Beck and Steer, 1991, Beck et al.,1996,Elenietal.,2001,Endler&Parker1999,Eysenck & Eysenck, 1991).

Relationship of the Behavioural Measures

The bivariate relationships between the scales/subscales of the behavioral measures were computed (Table - 3) and it indicated the relationships among the scales/subscales of the behavioral measures accounting for- male and female 'high dependent tobacco smokers', 'low dependent tobacco smokers', 'high dependent smokeless tobacco users', and 'low dependent smokeless tobacco users' and 'non-users'. Both smokers and smokeless tobacco users were screened out on the basis of the severity of tobacco use according to their scores by using the Fagerstrom Test for Nicotine Dependence(Heatherton et al., 1991).

The results of Pearson Correlation on Table-3 revealed that there is more significant positive relationship than significant negative relationship amongst the scales/subscales of the behavioral measures. As shown on the table, the Anxiety (BAI) scaleshows significant positive relationships with Depression (BDI-II) scale, Perceived Stress (PSS) scale, Emotion Oriented Coping {CISS (E)}scale, Avoidance Oriented Coping {CISS (A)} scale, Personality {EPQ-R (Psychoticism)} scale,

Personality {EPQ-R (Extraversion)} scale , Personality {EPQ-R (Neuroticism)} scale. The Pearson Correlation shows highest positive correlation between Anxiety (BAI) and Depression (BDI-II) (at .92**). This shows that the increase in anxiety highly correlates the increase in depression.The Anxiety (BAI) scale also shows significant negative relationships with Task oriented coping {CISS (T)}scale(at -.67**) depicting that with the increase in anxiety, task oriented coping decreases.

The Depression (BDI-II) scale shows significant positive relationship with Anxiety (BAI) scale, Perceived stress (PSS) scale, Emotion oriented coping {CISS (E)}scale, Avoidance oriented coping {CISS (A)} scale, Personality {EPQ-R (Psychoticism)} scale, Personality {EPQ-R (Extraversion)} scale , Personality {EPQ-R (Neuroticism)}. The Depression (BDI-II) scale also shows significant negative relationships with Task oriented coping {CISS (T)}scale(at -.65**) depicting that when depression increases, task oriented coping decreases.

The Perceived stress (PSS) scale shows significant positive relationship with Anxiety (BAI) scale, Depression (BDI-II) scale, Emotional oriented coping {CISS (E)}scale, Avoidance oriented coping {CISS (A)} scale, Personality {EPQ-R (Psychoticism)} scale, Personality {EPQ-R (Extraversion)} scale, Personality {EPQ-R (Neuroticism)} scale. The Perceived stress (PSS) scale also shows significant negative relationships with Task oriented coping {CISS (T)}scale(at -.65**) indicating that when Perceived stress increases, task oriented coping decreases.

It is also seen that the Personality {EPQ-R (Psychoticism)} scale shows a significant positive relationship with Anxiety (BAI) scale, Depression (BDI-II) scale, Perceived stress (PSS) scale, Emotion oriented coping {CISS (E)}scale, Avoidance oriented coping {CISS (A)}scale, Personality {EPQ-R (Extraversion)} scale, Personality {EPQ-R (Neuroticism)} scale.The Personality {EPQ-R (Psychoticism)} scale also shows significant negative relationships with Task oriented coping {CISS (T)}scale(at-.41**) depicting that when Psychoticism increases, task oriented coping decreases. The Personality {EPQ-R (Extraversion)} scale shows a significant positive relationship with Anxiety (BAI) scale, Depression (BDI-II) scale, Perceived stress (PSS) Emotion oriented coping {CISS (E)}scale, Avoidance oriented coping {CISS (A)} scale, Personality {EPQ-R (Psychoticism)} scale and Personality {EPQ-R (Neuroticism)} scale.It also shows significant negative relationships with Task

oriented coping {CISS (T)}scale(at -.54**) depicting that when extraversion increases, task oriented coping decreases. The Personality {EPQ-R (Neuroticism)} scale shows a significant positive relationship with Anxiety (BAI) scale, Depression (BDI-II) scale, Perceived stress (PSS) scale, Emotion oriented coping {CISS (E)}scale, Avoidance oriented coping {CISS (A)} scale,Personality {EPQ-R (Psychoticism)} scale and Personality {EPQ-R (Extraversion)} scale. It also shows significant negative relationships with Task oriented coping {CISS (T)}scale(at-.47**) depicting that when neuroticism increases, task oriented coping decreases.

The Task oriented coping {CISS (T)} scale shows significant negative relationships with Anxiety (BAI) scale, Depression (BDI-II) scale, Perceived stress (PSS) scale, Emotion oriented coping {CISS (E)}scale, Avoidance oriented coping {CISS (A)} scale, Personality {EPQ-R (Psychoticism)} scale, Personality {EPQ-R (Extraversion)} scale and Personality {EPQ-R (Neuroticism)} scale.The Emotion oriented coping {CISS (E)} scale shows significant positive relationships with Anxiety (BAI) scale, Depression (BDI-II) scale, Perceived stress (PSS) scale, Avoidance oriented coping {CISS (A)} scale, Personality {EPQ-R (Psychoticism)} scale, Personality {EPQ-R (Extraversion)} scale and Personality {EPQ-R (Neuroticism)} scale.and Avoidance oriented coping {CISS (A)} scale. The Emotion oriented coping {CISS (E)} scale shows significant negative correlations with Task oriented coping {CISS (T)} (at -.57**) depicting that when emotional oriented coping increases, task oriented coping decreases. Finally, the Avoidance oriented coping {CISS (A)} scaleshows significant positive relationships with Anxiety (BAI) scale, Depression (BDI-II) scale, Perceived stress (PSS) scale, Emotion oriented coping {CISS (E)}scale, Emotion oriented coping {CISS (E)} scale, Personality {EPQ-R (Psychoticism)} scale, Personality {EPQ-R (Extraversion)} scale and Personality {EPQ-R (Neuroticism)} scale.The Avoidance oriented coping {CISS (A)} scale the shows a negative relationship with Task oriented coping {CISS (T)} scale(at -.82**) depicting that when avoidance oriented coping increases, task oriented decreases.

Anxiety (BAI), Depression (BDI-II), Perceived stress (PSS), Emotion oriented coping {CISS (E)}, Avoidance oriented coping {CISS (A)}, Personality {EPQ-R (Psychoticism)}, Personality {EPQ-R (Extraversion)}, Personality {EPQ-R (Neuroticism)} measures indicated significant positive relationship with each other

and they all shows significant negative relationship with Task oriented coping {CISS (T)}.

Table- 3: Correlations matrix of the dependent measures (Pearson Correlation) for the whole samples.

Variables	Anxiety	Depression	Perceived stress	Personality			Coping styles		
				Psychoti-cism	Extraver-Sion	Neuroti-cism	Task oriented	Emotional oriented	Avoidance oriented
Anxiety	1	.924**	.912**	.642**	.534**	.427**	-.678**	.894**	.672**
Depression		1	.875**	.635**	.475**	.369**	-.656**	.871**	.637**
Perceived Stress			1	.607**	.503**	.416**	-.652**	.868**	.658**
Psychoticism				1	.361**	.290**	-.410**	.605**	.439**
Extraversion					1	.711**	-.542**	.467**	.571**
Neuroticism						1	-.475**	.420**	.502**
Task Oriented							1	-.572**	-.826**
Emotional oriented								1	.629**
Avoidance oriented									1

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

A review of literature confirmed the findings indicating that the dimension of extroversion positively correlated with the stress-coping strategy of seeking social support, while the dimension of anxiety positively correlated with alleviating stress with substance use and negatively correlated with positive reinterpretation and growth. Mental stability negatively correlated with the seeking of social support for emotional reasons and a focus on and the venting of emotions, while independence negatively correlated with acceptance, denial, behavioural disengagement and mental disengagement. The dimension of self-control negatively correlated with seeking social support for emotional reasons and alcohol abuse, and positively correlated with religious coping (Dillinger et al., 2003). Personality does influence coping in many ways, however, some of which occur prior to coping. Even prior to coping, personality influences the frequency of exposure to stressors, the type of stressors

experienced, and appraisals (Vollrath, 2001). The stress and coping process has clearer health ramifications when we consider maladaptive coping strategies; research suggests that some individuals deal with stress by engaging in health-risk behaviors, such as smoking, alcohol use, drug use or overeating (Jackson & Knight, 2006).

Anxiety and depression share an avoidant coping style. Sufferers avoid what they fear instead of developing the skills to handle the kinds of situations that make them uncomfortable. Avoidant coping appears the most maladaptive as it is associated with increased distress (Ben-Zur, 1999; Knibb& Horton, 2008; Sherbourne, Hays, & Wells, 1995; Wijndaele et al., 2007). Most mood disorders are present as a combination of anxiety and depression. Surveys show that 60-70% of those with depression also have anxiety. And half of those with chronic anxiety also have clinically significant symptoms of depression (Hara Estroff Marano, 2003). The results regarding emotion-focused coping are more complex as this coping style has been associated with both increased and decreased levels of psychological distress (Network of Relationships Inventory; Ben-Zur, 1999; Brown & Harris, 1978b; Knibb& Horton, 2008; Wijndaele et al., 2007). Depressed tobacco users report having more stress in their lives, fewer coping resources and lower self-efficacy for quitting than do non-depressed tobacco users (Haukkala, Uutela, Vartiainen, McAlister and Knekt, 2000; Kinnunen, Doherty, Militello and Garvey, 1996).

Avoidant coping amplifies the relationship between high behavioral approach tendencies and outcomes such substance use behaviours (Hasking 2006, 2007). Certain kinds of emotion-focused coping amplify the link from neuroticism to post-traumatic stress symptoms (Chung et al. 2005). Personality may influence the effectiveness of coping strategies by facilitating or interfering with successful implementation of the strategy.Investigators conceptualize personality among tobacco users as a system of multiple cognitive and affective constructs that are activated by myriad diverse contextual stimuli and can be understood by analyzing in detail the within person structure, dynamics, and idiosyncrasies within each users personality system (Cervone, 1991; Shadel, et al., 2000). Ethnographic research in the Philippines

Table 4: ANOVA for 2 x 5 factorial design (2 Gender x 5 Levels of tobacco dependency) for the whole samples.

Variables	Tests of Between- Subjects Effects						
	Sources	**Sums of square**	**df**	**Means Square**	**F-ratio**	**Sig**	**Partial eta Squared**
Anxiety	Gender	681.213	1	681.213	279.410	.000	.491
	Level	11127.640	8	1390.955	570.520	.000	.940
	Gender x Levels	1.204	1	1.204	.494	.483	.002
Depression	Gender	559.498	1	559.498	139.414	.000	.325
	Levels	9046.520	8	1130.815	281.773	.000	.886
	Gender x Levels	9.600	1	9.600	2.392	.123	.008
Perceived Stress	Gender	338.461	1	338.461	128.390	.000	.307
	Levels	5962.173	8	745.272	282.706	.000	.886
	Gender x Levels	6.017	1	6.017	2.282	.132	.008
Psychoticism	Gender	77.911	1	77.911	9.197	.003	.031
	Levels	1983.813	8	247.977	29.273	.000	.447
	Gender x Levels	18.150	1	18.150	2.143	.144	.007
Extraversion	Gender	400.027	1	400.027	59.499	.000	.170
	Levels	875.960	8	109.495	16.286	.000	.310
	Gender x Levels	74.817	1	74.817	11.128	.001	.037
Neuroticism	Gender	328.201	1	328.201	45.573	.000	.136
	Levels	822.240	8	102.780	14.272	.000	.282
	Gender x Levels	65.104	1	65.104	9.040	.003	.030
Task Oriented	Gender	17613.345	1	17613.345	907.845	.000	.758
	Levels	11276.787	8	1409.598	72.655	.000	.667
	Gender x Levels	180.267	1	180.267	9.291	.003	.031
Emotional oriented	Gender	1442.843	1	1442.843	74.275	.000	.204
	Levels	28419.600	8	3552.450	182.873	.000	.835
	Gender x Levels	.067	1	.067	.003	.953	.000
Avoidance oriented	Gender	15686.046	1	15686.046	1212.612	.000	.807
	Levels	8032.667	8	1004.083	77.621	.000	.682
	Gender x Levels	3.038	1	3.038	.235	.628	.001

found females expressed emotional dependence on tobacco in the midst of life difficulties (WHO, 2001; Morrow &Barraclough, 2003a).

Bivariate analysis of variance 2X5 factorial design (2 gender X 5 levels of dependency) was used for analyzing data on a single variable at a time. The Table - 4, 'Tests of Between- Subjects Effects' revealed: one about the main effects of gender, one about the main effects of Levels of tobacco dependency interaction, and one about the main effects of Gender by levels of tobacco dependency interaction for different dependent measures.

To indicate there is a difference between the variables as assumed by the 2x5 ANOVA, Levene's test was applied. Levene's test is testing of homogeneity of variance, whether or not the variances of our groups are statistically different. Table – 5.1 shows non-significance on Anxiety (BAI) which indicated that there is homogeneity of variance (the variability is not significantly different). However, significance was found on Depression (BDI-II) and Perceived stress (PSS) scales. Thus, the null hypothesis of equal variances is rejected and it is concluded that there is a difference between the variances in the population on BDI and PSS. However, there is a tests that is applicable when the assumption of homogeneity of variances has been violated i.e. Brown-Forsythe test. A more robust test that is very similar to the Levene test was proposed by Brown and Forsythe (1974), instead of performing the ANOVA on the deviations from the mean, one can perform the analysis on the deviations from the group medians. Olejnik and Algina (1987) have shown that this test will give quite accurate error rates even when the underlying distributions for the raw scores deviate significantly from the normal distribution. Although violations of Levene's Test was observed, the robust tests for the equality of variances- Brown-Forsythe in Table 5.2 **-** shows significance on all scales which therefore indicates that there is homogeneity of variance and therefore we could proceed with the analysis of variance.

In the results (Table – 5.3) ANOVA for Anxiety, Depression, Perceived stress for the whole sample indicated *Sig*. = .483 on BAI, Sig. = .123 on BDI-II, Sig. = .132 on PSS. Furthermore, Table-6.3 shows ANOVA results for Coping Styles such as task, emotional and avoidance oriented coping for the whole samples, Sig. = .003 on CISS(T), Sig. = .953 on CISS(E) and Sig. = .628 on CISS(A). Table- 7.3 shows ANOVA results for Personality traits of Psychoticism, Extraversion and Neuroticism

for the whole samples, Sig. = .144 on EPQ-R (P), Sig. = .001 on EPQ-R (E), Sig. = .003 on EPQ-R (N)

The *F* statistic for the test of between-subjects effects on dependent variables {BAI, BDI, PSS, EPQ-R (P), (N), (E), CISS (T), (E), (A)} revealed significant difference among the score. This makes sense to test hypotheses.

Table 5.1: Levene's Test of Equality of Error Variances for BAI, BDI and PSS for the whole samples.

Variables	F	df1	df2	Sig.
BAI	1.323	9	290	.224
BDI	4.481	9	290	.000
PSS	6.768	9	290	.000

Table- 5.2: Brown-Forsythe Robust Tests for Equality of variances for BAI,BDI and PSS for the whole samples.

Variables	Fixed Factors	Statistic[a]	df1	df2	Sig.
BAI	Gender	17.530	1	296.901	.000
	Levels	538.856	9	245.142	.000
BDI	Gender	15.179	1	296.417	.000
	Levels	264.864	9	201.095	.000
PSS	Gender	12.677	1	297.678	.000
	Levels	263.356	9	223.406	.000

Table –5.3: 2X5 ANOVA for Gender X Levels of tobacco dependency on Anxiety (BAI), Depression (BDI) and Perceived stress (PSS) for the whole samples.

Dependent Variables	Sources	Sums of square	df	Means Square	F-ratio	Sig	Partial eta Squared
Anxiety	Gender	681.213	1	681.213	279.410	.000	.491
	Levels	11127.640	8	1390.955	570.520	.000	.940
	Gender x Levels	1.204	1	1.204	.494	.483	.002
Depression	Gender	559.498	1	559.498	139.414	.000	.325
	Levels	9046.520	8	1130.815	281.773	.000	.886
	Gender x Levels	9.600	1	9.600	2.392	.123	.008
Perceived Stress	Gender	338.461	1	338.461	128.390	.000	.307
	Levels	5962.173	8	745.272	282.706	.000	.886
	Gender x Levels	6.017	1	6.017	2.282	.132	.008

The 2 x 5 ANOVA was employed to highlight the significant effects of the independent variables (2 Gender x 5 levels of dependency) on the dependent measures. The 2 x 5 ANOVA {2 Gender (Male and Female) x 5 levels of dependency (high dependent smoker X low dependent smoker X high dependent smokeless tobacco user X low dependent smokeless tobacco user X non-users)} test scores of Beck Anxiety Inventory Test (BAI), Beck Depression Inventory–II (BDI-II), Perceived Stress Scale (PSS), Coping Inventory for stressful situation (CISS) and Eysenck Personality Questionnaire-Revised (EPQ-R*)* with Levene's Test of Equality of error Variances and Browns Forsythe Robust Test for Equality of variances for each scales are shown in Tables –5.1 to 5.3.

The 2x5 ANOVA {2 Gender (Male and Female) x 5 Levels of tobacco dependency (high dependent smoker X low dependent smoker X high dependent smokeless tobacco user X low dependent smokeless tobacco user X non-users)} test scores indicated that there is significant differences among the scores on Anxiety, Depression and Perceived stress. The results of Table -5.3 revealed the significant Independent effects of gender, levels of tobacco dependency, gender X levels of tobacco dependency in all the analyses for test scores on (i) Anxiety with effect size on gender is 49%(ii) Anxiety with effect size on levels of tobacco dependency is 94% (iii) Anxiety with effect size on gender X level of tobacco dependency shows 2%

effect size.These findings are confirmed by studies indicating that there are gender differences in the links between anxiety and substance use and related problems (see review by Armstrong and Costello 2002).Studies also show that heavy tobacco users often report that they use tobacco to relieve anxiety (Schneider & Houston, 1970), and studies show that smokers smoke more in stressful and anxiety-provoking situations (e.g., Rose et al., 1983).Smokers are also seemed to exhibit higher baseline levels of anxiety than non smokers (McCrae et al., 1978; Schneider & Houston, 1970; Williams et al., 1982).There is also evidence of a dose–response relationship between cigarette smoking and anxiety/mood disorders (Cardenas et al., 2002; Lasser et al., 2000).

The significant Independent effects of gender, levels of tobacco dependency, gender X levels of tobacco dependency in all the analyses for test scores on (i) Depression with effect size on gender is 32%(ii) Depression with effect size on levels of tobacco dependency is 88% (iii) Depression with effect size on gender X level of tobacco dependency shows 8% effect size.The finding is in consistent with previous studies, gender differences were frequently noted with respect to the effects of depression on tobacco use behavior. Specifically, girls who had been depressed were more likely to be current smokers than depressed boys (Acierno et al., 2000).High rates of tobacco dependency have been found among those in contact with treatment services for depression (Glass, 1990; Glassman, 1993; Glassman, 1998; Hughes, Hatsukami, Mitchell, & Dahlgren, 1986).With regard to internalizing disorders tobacco users are significantly more likely than non-users to meet criteria for major depressive disorder and anxiety disorders (Breslau, Kilbey and Andreski,1991).

The significant Independent effects of gender, levels of tobacco dependency, gender X levels of tobacco dependency in all the analyses for test scores on (i) Perceived stress with effect size on gender is 30%(ii) Perceived stress with effect size on levels of tobacco dependency is 88% (iii) Perceived stress with effect size on gender X level of tobacco dependency shows 8% effect size. The result is in line with the findings of Day & Livingstone, 2003 which shows that gender role and sex have an effect on how men and women perceive stress and their levels of tobacco use.Naquin and Gilbert (1996)found that college students who were current smokers reported higher levels of perceived stress compared to students who did not

smoke.Nichter, Nichter, Carkoglu, and TERN members (2007) found that smoking to alleviate distresswas a common motivation for smokers and tobacco users, and that smoking cigaretteswas viewed as a nonverbal signal of stress, presumably with the goal of obtaining social support. All of these studies support links between stress/NA and smoking.

Table 5.4: Mean differences for significant two-way interaction effects on Beck's Anxiety Inventory Scale (BAI) for the whole samples.

Post Hoc tests : Scheffe										
Independent Variables	**MHDS (1)**	**MHDSL (2)**	**MLDS (3)**	**MLDSL (4)**	**MNU (5)**	**FHDS (6)**	**FHDSL (7)**	**FLDS (8)**	**FLDSL (9)**	**FNU (10)**
MHDS (1)	X	4.87*	7.03*	11.07*	17.43*	-4.07*	1.20	4.53*	9.53*	13.97*
MHDSL (2)		X	2.17*	6.20*	12.57*	-8.93*	-3.67*	-.33	4.67*	9.10*
MLDS (3)			X	4.03*	10.40*	-11.10*	-5.83*	-2.50*	2.50*	6.93*
MLDSL (4)				X	6.37*	-15.13*	-9.87*	-6.53*	-1.53	2.90
MNU (5)					X	-21.50*	-16.23*	-12.90*	-7.90*	-3.47*
FHDS (6)						X	5.27*	8.60*	13.60*	18.03*
FHDSL (7)							X	3.33*	8.33*	12.77*
FLDS (8)								X	5.00*	9.43*
FLDSL (9)									X	4.43*

Table- 5.5: Mean differences for significant two-way interaction effects on Becks Depression Inventory- II(BDI-II) for the whole samples.

Post Hoc tests : Scheffe										
Independent Variables	**MHDS (1)**	**MHDSL (2)**	**MLDS (3)**	**MLDSL (4)**	**MNU (5)**	**FHDS (6)**	**FHDSL (7)**	**FLDS (8)**	**FLDSL (9)**	**FNU (10)**
MHDS (1)	X	4.23*	6.00*	10.73*	16.57*	-2.80*	1.40	5.10*	8.20*	12.47*
MHDSL (2)		X	1.77	6.50*	12.33*	-7.03*	-2.83*	.87	3.97*	8.23*
MLDS (3)			X	4.73*	10.57*	-8.80*	-4.60*	-90	2.20*	6.47*
MLDSL (4)				X	5.83*	-13.53*	-9.33*	-5.63*	-2.53*	1.73
MNU (5)					X	-19.37*	-15.17*	-11.47*	-8.37*	-4.10*
FHDS (6)						X	4.20*	7.90*	11.00*	15.27*
FHDSL (7)							X	3.70*	6.80*	11.07*
FLDS (8)								X	3.10*	7.37*
FLDSL (9)									X	4.27*

Table 5.6: Mean differences for significant two-way interaction effects on Perceived Stress Scale (PSS) for the whole samples.

Post Hoc tests : Scheffe										
Independent Variables	**MHDS (1)**	**MHDSL (2)**	**MLDS (3)**	**MLDSL (4)**	**MNU (5)**	**FHDS (6)**	**FHDSL (7)**	**FLDS (8)**	**FLDSL (9)**	**FNU (10)**
MHDS (1)	X	2.87*	6.17*	9.67*	12.80*	-2.63*	2.13*	4.60*	8.73*	8.90*
MHDSL (2)		X	3.30*	6.80*	9.93*	-5.50*	-.73*	1.73	5.87*	6.03*
MLDS (3)			X	3.50*	6.63*	-8.80*	-4.03*	-1.57*	2.57*	2.73*
MLDSL (4)				X	3.13*	-12.30*	-7.53*	-5.07*	-.93	-.77
MNU (5)					X	-15.43*	-10.67*	-8.20*	-4.07*	-3.90*
FHDS (6)						X	4.77*	7.23*	11.37*	11.53*
FHDSL (7)							X	2.47*	6.60*	6.77*
FLDS (8)								X	4.13*	4.30*
FLDSL (9)									X	.17

Table 5.4 –5.6 shows Post-hoc comparisons, Scheffe test was employed for Post-hoc multiple mean comparisons of Male High Dependent Smokers (MHDS), Male High Dependent Smokeless Tobacco users (MHDSL), Male Low Dependent Smokers (MLDS), Male Low Dependent Smokeless Tobacco users (MLDSL), Male Non-Users (MNU) and Female High Dependent Smokers (FHDS), Female High Dependent Smokeless Tobacco users (FHDSL), Female Low Dependent Smokers (FLDS), Female Low Dependent Smokeless Tobacco users (FLDSL), Female Non-Users (FNU) on Beck Anxiety Inventory Test (BAI), Becks Depression Inventory – II (BDI-II) and Perceived Stress Scale (PSS) respectively. The result indicated significant mean differences on Anxiety, Depression and Perceived stress among the groups with the highest significant mean differences seen between Male Non-User and Female High Tobacco Dependent Smoker (-21.50*) on BAI (Table – 5.4), highest significant mean difference seen between Male Non-User and Female High Tobacco Dependent Smoker (-19.35*) on BDI-II (Table – 5.5) and highest significant mean differences seen between Male Non-User and Female High Tobacco Dependent Smoker (-15.43*) on PSS (Table – 5.6). Therefore, the result indicates that female high tobacco dependent users are more anxious, depressed and perceived stress as compared to others. A recent study indicated that over 70% of cigarettes are consumed by adults with at least one mental disorder (Grant, Hasin, Chou, Stinson, & Dawson, 2004; Mykletun, Overland, Aaro, Liabo, & Stewart, 2008).

Table – 6.1: Levene's Test of Equality of Error Variances for CISS (T), (E) and (A) for the whole samples.

Variables	F	df1	df2	Sig.
CISS (T)	1.365	9	290	.204
CISS (E)	1.361	9	290	.205
CISS (A)	1.362	9	290	.205

Table-6.2: Brown-Forsythe Robust Tests for Equality of Variancesfor CISS (Task, Emotional and Avoidant oriented coping)for the whole samples.

Variables	Fixed Factors	Statistic[a]	df1	df2	Sig.
CISS (T)	Gender	323.157	1	297.976	.000
	Levels	169.559	9	248.419	.000
CISS (E)	Gender	11.874	1	296.883	.001
	Levels	170.315	9	249.595	.000
CISS (A)	Gender	424.092	1	297.841	.000
	Levels	213.043	9	238.557	.000

Table – 6.3: 2X5 ANOVA for Gender X Levels of tobacco dependency on Task oriented coping style {CISS (T)}, Emotion oriented coping style {CISS (E)} and Avoidance oriented coping style {CISS (A) for the whole samples.

Dependent Variables	Sources	Sums of square	df	Means Square	F-ratio	Sig	Partial eta Squared
Task Oriented	Gender	17613.345	1	17613.345	907.845	.000	.758
	Levels	11276.787	8	1409.598	72.655	.000	.667
	Gender x levels	180.267	1	180.267	9.291	.003	.031
Emotional oriented	Gender	1442.843	1	1442.843	74.275	.000	.204
	Levels	28419.600	8	3552.450	182.873	.000	.835
	Gender x levels	.067	1	.067	.003	.953	.000
Avoidance oriented	Gender	15686.046	1	15686.046	1212.612	.000	.807
	Levels	8032.667	8	1004.083	77.621	.000	.682
	Gender x levels	3.038	1	3.038	.235	.628	.001

Levene's test on Table – 6.1 shows non-significance on Coping Styles (Task, Emotional and Avoidance oriented coping) which indicated that there is homogeneity of variances on all the dependent measures. Thus, the null hypothesis of equal variances is accepted and it is concluded that there is a homogenity between the variances in the population on Coping Styles (Task, Emotional and Avoidance oriented coping). However, the robust test for equality of variances - Brown-Forsythe was also conducted (Table - 6.2) which shows significance on all scales which also confirmed that there is equality of variances and therefore we could proceed with the analysis of variance.

Table – 6.3 shows 2x5 ANOVA {2 Gender (Male and Female) x 5 levels and types (high dependent smoker X high dependent smokeless tobacco user X low dependent smoker X low dependent smokeless tobacco user X non-users)} test scores shows that in Coping styles there is significant differences among the scores on Task oriented coping style, Emotion oriented coping style and Avoidance oriented coping style.The results of Table -6.3 revealed the significant Independent effects of gender, levels of tobacco dependency, gender X levels of tobacco dependency in all the analyses for test scores on (i) Task oriented coping style with effect size on gender is 75%(ii) Task oriented coping style with effect size on levels of tobacco dependency is 66% (iii)Task oriented coping style with effect size on gender X level of tobacco dependency shows 3% effect size.

The significant Independent effects of gender, levels of tobacco dependency, gender X levels of tobacco dependency in all the analyses for test scores on (i) Emotional oriented coping style with effect size on gender is 20%(ii) Emotional oriented coping style with effect size on levels of tobacco dependency is 83% (iii) Emotional oriented coping style with effect size on gender X level of tobacco dependency shows no effect size.

The significant Independent effects of gender, levels of tobacco dependency, gender X levels of tobacco dependency in all the analyses for test scores on (i) Avoidance oriented coping style with effect size on gender is 80%(ii) Avoidance oriented coping style with effect size on levels of tobacco dependency is 68% (iii) Avoidance oriented coping style with effect size on gender X level of tobacco dependency shows 1% effect size.

Table- 6.4: Mean differences for significant two-way interaction effects onCoping Inventory for Stressful Situation(Task Oriented Coping) for the whole samples.

Post Hoc tests : Scheffe										
Independent Variables	**MHDS (1)**	**MHDSL (2)**	**MLDS (3)**	**MLDSL (4)**	**MNU (5)**	**FHDS (6)**	**FHDSL (7)**	**FLDS (8)**	**FLDSL (9)**	**FNU (10)**
MHDS (1)	X	-.63	-7.30*	-12.73*	-15.80*	17.77*	11.37*	8.03*	3.77	.77
MHDSL (2)		X	-6.67*	-12.10*	-15.17*	18.40*	12.00*	8.67*	4.40	1.40
MLDS (3)			X	-5.43*	-8.50*	25.07*	18.67*	15.33*	11.07*	8.07*
MLDSL (4)				X	-3.07	30.50*	24.10*	20.77*	16.50*	13.50*
MNU (5)					X	33.57*	27.17*	23.83*	19.57*	16.57*
FHDS (6)						X	-6.40*	-9.73*	-14.00*	-17.00*
FHDSL (7)							X	-3.33	-7.60*	-10.60*
FLDS (8)								X	-4.27	-7.27*
FLDSL (9)									X	-3.00

Table- 6.5: Mean differences for significant two-way interaction effects onCoping Inventory for Stressful Situation (Emotional oriented)for the whole samples

Post Hoc tests : Scheffe										
Independent Variables	**MHDS (1)**	**MHDSL (2)**	**MLDS (3)**	**MLDSL (4)**	**MNU (5)**	**FHDS (6)**	**FHDSL (7)**	**FLDS (8)**	**FLDSL (9)**	**FNU (10)**
MHDS (1)	X	12.10*	14.03*	20.77*	30.50*	-3.23	5.43*	13.33*	16.50*	24.10*
MHDSL (2)		X	1.93	8.67*	18.40*	-15.33*	-6.67*	1.23	4.40	12.00*
MLDS (3)			X	6.73*	16.47*	-17.27*	-8.60*	-.70	2.47	10.07*
MLDSL (4)				X	9.73*	-24.00*	-15.33*	-7.43*	-4.27	3.33
MNU (5)					X	-33.73*	-25.07*	-17.17*	-4.01*	6.40*
FHDS (6)						X	8.67*	16.57*	19.73*	27.33*
FHDSL (7)							X	7.90*	11.07*	18.67*
FLDS (8)								X	3.17	10.77*
FLDSL (9)									X	7.60*

Table- 6.6: Mean differences for significant two-way interaction effects onCoping Inventory for Stressful Situation (Avoidance oriented) for the whole samples.

Post Hoc tests : Scheffe										
Independent Variables	**MHDS (1)**	**MHDSL (2)**	**MLDS (3)**	**MLDSL (4)**	**MNU (5)**	**FHDS (6)**	**FHDSL (7)**	**FLDS (8)**	**FLDSL (9)**	**FNU (10)**
MHDS (1)	X	4.33*	8.53*	9.80*	13.73*	-16.33*	-11.17*	-6.73*	-3.73	-.40
MHDSL (2)		X	4.20*	5.47*	9.40*	-20.67*	-15.50*	-11.07*	-8.07*	-4.73*
MLDS (3)			X	1.27	5.20*	-24.87*	-19.70*	-15.27*	-12.27*	-8.93*
MLDSL (4)				X	3.93*	-26.13*	-20.97*	-16.53*	-13.53*	-10.20*
MNU (5)					X	-30.67*	-24.90*	-20.47*	-17.47*	-14.13*
FHDS (6)						X	5.17*	9.60*	12.60*	15.93*
FHDSL (7)							X	4.43*	7.43*	10.77*
FLDS (8)								X	3.00	6.33*
FLDSL (9)									X	3.33

Table 6.4 to 6.6 shows Post-hoc comparisons, Scheffe test was employed for Post-hoc multiple mean comparisons of Male High Dependent Smokers (MHDS), Male High Dependent Smokeless Tobacco users (MHDSL), Male Low Dependent Smokers (MLDS), Male Low Dependent Smokeless Tobacco users (MLDSL), Male Non-Users (MNU) and Female High Dependent Smokers (FHDS), Female High Dependent Smokeless Tobacco users (FHDSL), Female Low Dependent Smokers (FLDS), Female Low Dependent Smokeless Tobacco users (FLDSL), Female Non-Users (FNU) on Coping Inventory for Stressful Situations (Task, Emotional and Avoidance oriented coping). The result indicated significant mean differences on Task, Emotional and Avoidance oriented coping among the groups with the highest significant mean differences seen between Male Non-User and Female High Tobacco Dependent Smoker (33.57*) on Task oriented coping (Table – 6.4), highest significant mean difference seen between Male Non-User and Female High Tobacco Dependent Smoker (-33.73*) on Emotional oriented coping (Table – 6.5), and highest significant mean difference seen between Male Non-User and Female High Tobacco Dependent Smoker (-30.67*) on Avoidance oriented coping (Table – 6.6).

The findings is supported by research suggesting that men have a broader repertoire of coping responses than do women and in comparison with men, women report having more problems coping with stress and relying more on smoking as a

coping response (Grunberg, Winders, &Wewers, 1991; McDaniel & Richards, 1990). Kaplan et al. (1988) studies revealed that cigarette and other tobacco products use in adolescents exposed to violence may be conceptualized as a coping strategy to deal with anxiety and negative effect. Lack of coping skills to stressful situations and unsuccessful adjustment to dramatic life changes may lead to the adoption of maladaptive behaviors among male and female adolescents (Comeau et al., 2001; Coogan et al., 1998; Henker,Whalen, &Jamner, 2002; Koval& Pederson, 1999).If an individual expects that smoking will help him or her feel better, then he or she may be more likely to smoke to relieve negative affect. Over time, this may become a conditioned association (Carmody, 1992).

Table–7.1: Levene's Test of Equality of Error Variances for EPQ-R (P), (E), (N) for the whole samples.

Variables	F	df1	df2	Sig.
EPQ-R (P)	2.534	9	290	.008
EPQ-R (E)	4.049	9	290	.000
EPQ-R (N)	1.394	9	290	.190

Table – 7.2: Brown-Forsythe Robust Tests for Equality of variances for EPQ-R (P), (E), (N) for the whole samples.

Variables	Fixed Factors	Statistic[a]	df1	df2	Sig.
EPQR (P)	Gender	13.781	1	297.644	.000
	Levels	26.760	9	254.104	.000
EPQR (E)	Gender	49.171	1	292.560	.000
	Levels	22.182	9	258.602	.000
EPQR (T)	Gender	44.721	1	297.612	.000
	Levels	19.425	9	273.182	.000

Table -7.3: 2X5 ANOVA for Gender X Levels of tobacco dependency on Personality Psychoticism {EPQ-R (P)}, Extraversion {EPQ-R (E)} and Neuroticism {EPQ-R (N)}for the whole samples.

Dependent Variables	Sources	Sums of square	df	Means Square	F-ratio	Sig	Partial eta Squared
Psychoticism	Gender	77.911	1	77.911	9.197	.003	.031
	Levels	1983.813	8	247.977	29.273	.000	.447
	Gender x Levels	18.150	1	18.150	2.143	.144	.007
Extraversion	Gender	400.027	1	400.027	59.499	.000	.170
	Levels	875.960	8	109.495	16.286	.000	.310
	Gender x Levels	74.817	1	74.817	11.128	.001	.037
Neuroticism	Gender	328.201	1	328.201	45.573	.000	.136
	Levels	822.240	8	102.780	14.272	.000	.282
	Gender x Levels	65.104	1	65.104	9.040	.003	.030

Levene's test on Table– 7.1 shows non-significant result on Psychoticism and Neuroticism in Personality Test which indicated that there is homogeneity of variance. However, significance was found on Personality (Extraversion). Thus, the null hypothesis of equal variances is rejected and it is concluded that there is a difference between the variances in the population on Personality (Extraversion). However, as mentioned before, there is a tests that is applicable when the assumption of homogeneity of variances has been violated i.e. Brown and Forsythe test. Although Levene's was violated in Extraversion measure, this measure falls under the normal skewness and kurtosis (Tables - 2). Moreover, the robust test for equality of variances, Brown-Forsythe in Table- 7.2 shows significance on all the measures and indicates that there is homogeneity of variance and therefore we could proceed with the analysis of variance.

Table- 7.3 shows 2x5 ANOVA {2 Gender (Male and Female) x 5 levels (high dependent smoker X low dependent smoker X high dependent smokeless tobacco user X low dependent smokeless tobacco user X non-users)} of Personality (Psychoticism, Neuroticism and Extraversion) test.

The 2x5 ANOVA {2 Gender (Male and Female) x 5 Levels of tobacco dependency (high dependent smoker X low dependent smoker X high dependent smokeless tobacco user X low dependent smokeless tobacco user X non-users)} test scores indicated that there is significant differences among the scores on Personality test of Psychoticism, Neuroticism and Extraversion. The results of Table -7.3 revealed the significant Independent effects of gender, levels of tobacco dependency, gender X levels of tobacco dependency in all the analyses for test scores on (i) Psychotisism with effect size on gender is 3%(ii) Psychotisism with effect size on levels of tobacco dependency is 44% (iii) Psychotisism with effect size on gender X level of tobacco dependency shows 7% effect size.

The significant Independent effects of gender, levels of tobacco dependency, gender X levels of tobacco dependency in all the analyses for test scores on (i) Extraversion with effect size on gender is 17%(ii) Extraversion with effect size on levels of tobacco dependency is 31% (iii)Extraversion with effect size on gender X level of tobacco dependency shows 3% effect size.In an early review of literature, Smith (1970) noted that smokers and tobacco users generally scored higher on measures of Extraversion. Gilbert (1995) reviewed studies conducted since the Smith (1970) review and concluded that only a little more than half of these studies found that smokers scored significantly higher than nonsmokers on assessments of Neuroticism and Extraversion.

The significant Independent effects of gender, levels of tobacco dependency, gender X levels of tobacco dependency in all the analyses for test scores on (i) Neuroticism with effect size on gender is 13%(ii) Neuroticism with effect size on levels of tobacco dependency is 28% (iii)Neuroticism with effect size on gender X level of tobacco dependency shows 3% effect size.More recent reports demonstrated a link between tobacco use and higher neuroticism, extraversion, hostility, aggression, novelty seeking, impulsiveness, excitement seeking, and sensation seeking and lower agreeableness, conscientiousness, self-discipline, and constraint (Calhoun, Bosworth, Siegler and Bastian, 2001; Whiteman, Fowkes, Deary, & Lee, 1997) with neuroticism demonstrating a consistent relationship with tobacco dependence (Breslau, Kilbey, & Andreski, 1993). Evidence among adults suggesting neuroticism is related to both smoking and panic attacks (Goodwin & Hamilton, 2002).

Table – 7.4: Mean differences for significant two-way interaction effects on Eysenck Personality Questionnaire – R (Psychoticism) for the whole samples.

Post Hoc tests : Scheffe										
Independent Variables	**MHDS (1)**	**MHDSL (2)**	**MLDS (3)**	**MLDSL (4)**	**MNU (5)**	**FHDS (6)**	**FHDSL (7)**	**FLDS (8)**	**FLDSL (9)**	**FNU (10)**
MHDS (1)	X	1.70	3.00	3.17*	7.57*	-1.63	.30	2.33	4.93*	5.17*
MHDSL (2)		X	1.30	1.47	5.87*	-3.33*	-1.40	.63	3.23*	3.47*
MLDS (3)			X	.17	4.57*	-4.63*	-2.70	-.67	1.93	2.17
MLDSL (4)				X	4.40*	-4,80*	-2.87	-.83	1.77	2.00
MNU (5)					X	-9.20*	-7.27*	-5.23*	-2.63	-2.40
FHDS (6)						X	1.93	3.97*	6.57*	6.80*
FHDSL (7)							X	2.03	4.63*	4.87*
FLDS (8)								X	2.60	2.83
FLDSL (9)									X	.23

Table- 7.5: Mean differences for significant two-way interaction effects onthe Eysenck Personality Questionnaire - R (Extraversion) for the whole samples.

Post Hoc tests : Scheffe										
Independent Variables	**MHDS (1)**	**MHDSL (2)**	**MLDS (3)**	**MLDSL (4)**	**MNU (5)**	**FHDS (6)**	**FHDSL (7)**	**FLDS (8)**	**FLDSL (9)**	**FNU (10)**
MHDS (1)	X	3.47*	4.17*	4.53*	4.50*	-1.23*	-.80	.70	2.50	3.03*
MHDSL (2)		X	.70	1.07	1.03	-4.70*	-4.27*	-2.77	-.97	-.43
MLDS (3)			X	.37	.33	-5.40*	-4.97*	-3.47*	-1.67	-1.13
MLDSL (4)				X	-.05	-5.77*	-5.33*	-3.73*	-2.03	-1.50
MNU (5)					X	-5.73*	5.30*	-3.80*	-2.00	-1.47
FHDS (6)						X	.43	1.93	3.73*	4.27*
FHDSL (7)							X	1.50	3.30*	3.83*
FLDS (8)								X	1.80	2.33
FLDSL (9)									X	.53

Table- 7.6: Mean differences for significant two-way interaction effects on Eysenck Personality Questionnaire - R (Neuroticism) for the whole samples.

Post Hoc tests : Scheffe										
Independent Variables	**MHDS (1)**	**MHDSL (2)**	**MLDS (3)**	**MLDSL (4)**	**MNU (5)**	**FHDS (6)**	**FHDSL (7)**	**FLDS (8)**	**FLDSL (9)**	**FNU (10)**
MHDS (1)	X	3.00*	4.77*	4.43*	2.87	-1.60	-.60	.33	2.17	2.70
MHDSL (2)		X	1.77	1.43	-.13	-4.60*	-3.60*	-2.67	-.83	-.30
MLDS (3)			X	-.33	-1.90	-6.37*	-5.37*	-4.43*	-2.60	-2.07
MLDSL (4)				X	-.03	-5.77*	-5.33*	-3.83*	-3.03	-1.50
MNU (5)					X	-4.47*	-3.47*	-2.53*	-.70	-.17
FHDS (6)						X	1.00	1.93	3.77*	4.30*
FHDSL (7)							X	.93	2.77	3.30*
FLDS (8)								X	1.83	2.37
FLDSL (9)									X	.53

The Post-hoc multiple mean comparisons employing Scheffe test was done sequentially between Male High Dependent Smokers (MHDS), Male High Dependent Smokeless Tobacco users (MHDSL), Male Low Dependent Smokers (MLDS), Male Low Dependent Smokeless Tobacco users (MLDSL), Male Non-Users (MNU) and Female High Dependent Smokers (FHDS), Female High Dependent Smokeless Tobacco users (FHDSL), Female Low Dependent Smokers (FLDS), Female Low Dependent Smokeless Tobacco users (FLDSL), Female Non-Users (FNU) on Personality (Psychoticism, Extraversion and Neuroticism) test measures, which revealed significant mean differences between almost all the groups on Table –7.4 to Table –7.6. The result indicated significant mean differences on Anxiety, Depression and Perceived stress among most of the groups with the highest significant mean differences seen between Male Non-User and Female High Tobacco Dependent Smoker (-9.20*) on Psychoticism (Table – 7.4), highest significant mean difference seen between Male Non-User and Female High Tobacco Dependent Smoker (-5.77*) on Extraversion (Table – 7.5), and highest significant mean difference seen between Male Non-User and Female High Tobacco Dependent Smoker (-6.37*) on Neuroticism (Table – 7.6).

The findings are in line to studies in which investigators conceptualize personality among tobacco users as a system of multiple cognitive and affective

constructs that are activated by myriad diverse contextual stimuli and can be understood by analyzing in detail the within person structure, dynamics, and idiosyncrasies within each users personality system (Cervone, 1991; Shadel, et al., 2000). Ethnographic research in the Philippines found females expressed emotional dependence on tobacco in the midst of life difficulties (WHO, 2001). Krueger et al. (1996) found that personality traits were more strongly related to a given psychiatric disorder when examining those with comorbid psychopathology than when examining only "pure" cases of the disorder. Likewise, tobacco may be more strongly related to personality variation associated with psychiatric comorbidity than it is with variation in personality among those with no psychiatric disorder history.

Prediction of the Symptoms of Psychopathology from Personality (Psychoticism, Extraversion and Neuroticism) and Perceived Stress:

For prediction of the symptoms of anxiety from the behavioral measures of Personality (Psychoticism, Extraversion and Neuroticism),Multiple regression analyses was employed which attempted to determine the antecedents and the consequences relationship among the behavioural measures of the theoretical construct as envisioned.

The multiple regression model with Personality (Psychoticism) ($F=208.6$; $p<.01$), Extraversion ($F=118.6$; $p<.01$) and Neuroticism ($F=66.3$; $p<.01$) as predictors and Anxiety as the criterion emerged to be statistically significant. The R, R square and the change statistics wth Durbin Watson are presented in Table – 8.1 and the histogram and graphs depicting normality and the homogeneity of the regression slope are presented in Figure- 5.1 to 7.2 respectively.

Table 8.1: R square, change statistics and Durbin-Watson statistics in the prediction of Anxiety (BAI). Predictor(s) = EPQR (P), EPQR (E), EPQR (N) for the whole samples.

Predictors	**Criterion variables**	**$R^{2\ change}$**	**F-Change**	**Sig**	**Durbin Watson**
Psychoticism	Anxiety	.41	208.6	.00	1.85
Extraversion		.28	118.6	.00	1.84
Neuroticism		1.8	66.3	.00	1.67

Table 8.2: Beta values and Collinearity Statistics in the prediction of scores on Anxiety (BAI) for the whole samples.

Predictors	Standardized Coefficients	T	Sig.	Collinearity Statistics	
	Beta			Tolerance	VIF
Psychoticism	.642	14.445	.000	1.000	1.000
Extraversion	.534	10.891	.000	1.000	1.000
Neuroticism	.427	8.145	.000	1.000	1.000

Figure 5.1: Histogram depicting the distribution of residual scores on Anxiety (BAI). Predictor = EPQ-R (Psychoticism).

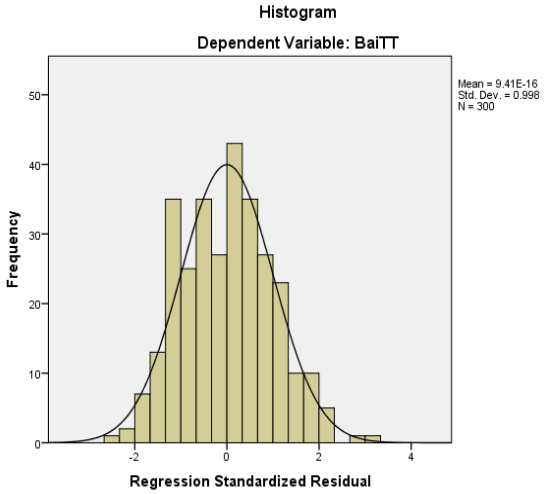


Figure 5.2: Graph depicting the distribution of residual scores on Anxiety (BAI). Predictor = EPQ-R (Psychoticism).

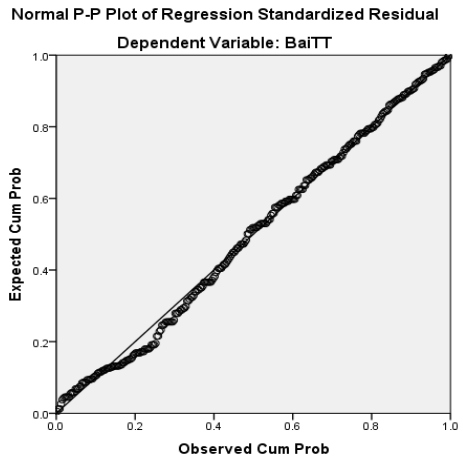


Figure 6.1: Histogram depicting the distribution of residual scores on Anxiety (BAI). Predictor = EPQ-R (Extraversion).

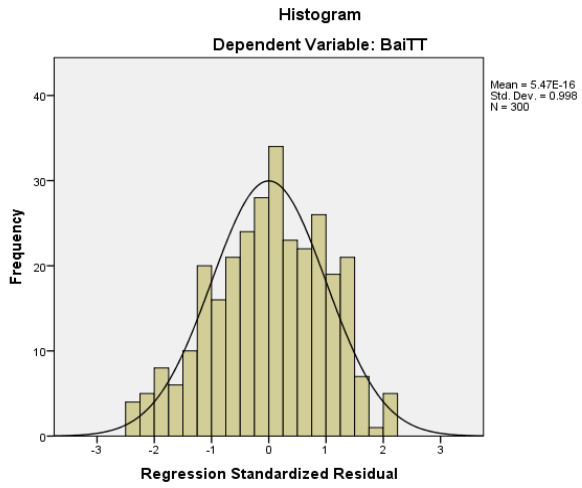


Figure 6.2: Graph depicting the distribution of residual scores on Anxiety (BAI). Predictor = EPQ-R (Extraversion).

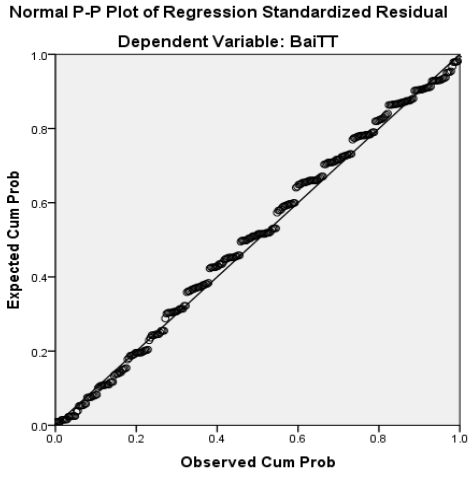


Figure 7.1: Histogram depicting the distribution of residual scores on Anxiety (BAI). Predictor = EPQ-R (Neuroticism).

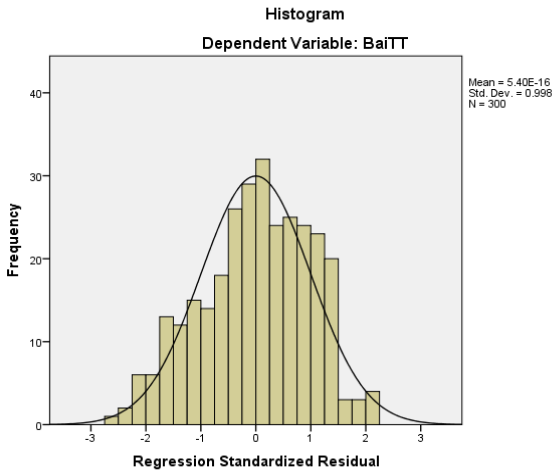
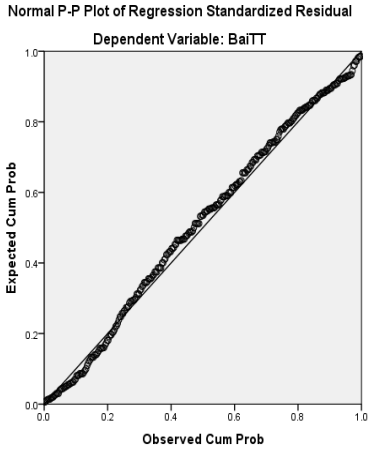


Figure 7.2: Graph depicting the distribution of residual scores on Anxiety (BAI). Predictor = EPQ-R (Neuroticism).



The Durbin-Watson statistics and the Collinearity statistics (Table –8.1 & 8.2) supported by the normality and the homogeneity of the regression slope (Figure-5.1 – 7.2) revealed that on scores of Anxiety with Psychoticism as a predictor explain 41% of variances, Extraversion explain 28% and Neuroticism explain 1.8%. Evidence

among adults suggesting neuroticism is related to both smoking anxiety and panic attacks (Goodwin & Hamilton, 2002).

The regression model with Personality (Psychoticism) (F=201.6; p<.01), Personality (Extraversion)(F=86.7; p<.01) and Personality (Neuroticism)(F=46.9; p<.01) as predictors and Depression as the criterion emerged to be statistically significant. The R, R square and the change statistics with Durbin Watson are presented in Table- 9.1 andand the histogram and graphs depicting normality and the homogeneity of the regression slope are presented in Figure- 8.1 to 10.2 respectively.

The Durbin-Watson statistics and the Collinearity statistics (Table- 9.1 &9.2) supported by the normality and the homogeneity of the regression slope (Figure- 8.1 – 10.2) revealed that on scores of Depression with Personality (Psychoticism) as a predictor explain 40% of variances, Personality (Extraversion) explain 22% and Personality (Neuroticism) explain 13%. Studies suggest that depression is linked to traits such as neuroticism/negative emotionality, extraversion/positive emotionality, and conscientiousness. Moreover, personality characteristics appear to contribute to the onset and course of depression through a variety of pathways.Personality styles, which usually manifest in the cognitive and behavioral domains are affected by psychosocial factors, which in turn can compromise an individual's self-esteem and ability to cope, thus exacerbating the impact of the original stressor and causing depression onset (Parker, 2014).

Tables- 9.1: R square, change statistics and Durbin-Watson statistics in the prediction of Depression (BDI). Predictor(s) = EPQR (P), EPQR (E), EPQR (N) for the whole samples.

Predictors	**Criterion Variables**	**$R^{2\ change}$**	**F-Change**	**Sig**	**Durbin Watson**
Psychoticism	Depression	.40	201.6	.00	1.90
Extraversion		.22	86.7	.00	1.77
Neuroticism		.13	46.9	.00	1.66

Table- 9.2: Beta values and Collinearity Statistics in the prediction of scores on Depression (BDI) for the whole samples.

Predictors	Standardized Coefficients	t	Sig.	Collinearity Statistics	
	Beta			Tolerance	VIF
Psychoticism	.635	14.199	.000	1.000	1.000
Extraversion	.475	9.311	.000	1.000	1.000
Neuroticism	.369	6.846	.000	1.000	1.000

Figure 8.1: Histogram depicting the distribution of residual scores on Depression (BDI-II). Predictor = EPQ-R (Psychoticism).

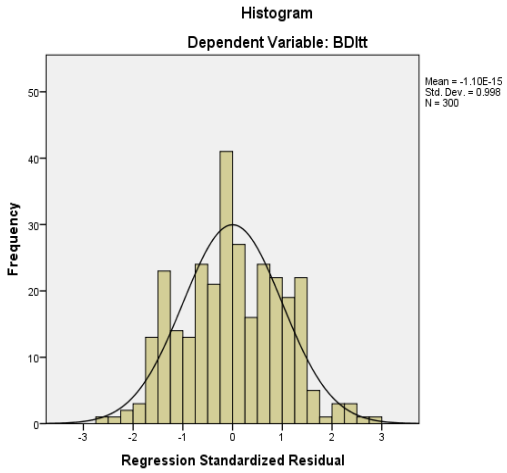


Figure 8.2: Graph depicting the distribution of residual scores on Depression (BDI-II). Predictor = EPQ-R (Psychoticism).

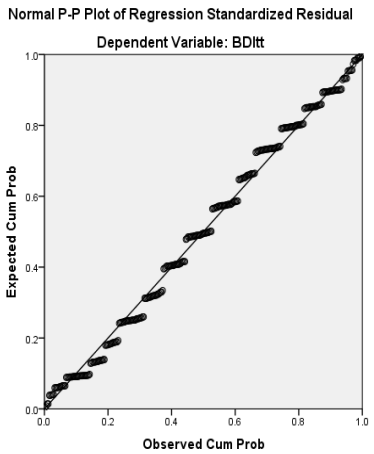


Figure 9.1: Histogram depicting the distribution of residual scores on Depression (BDI-II). Predictor = EPQ-R (Extraversion).

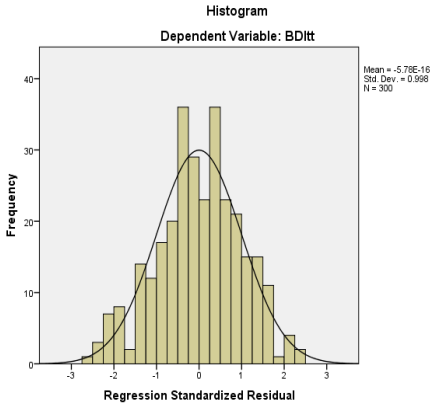


Figure 9.2: Graph depicting the distribution of residual scores on Depression (BDI-II). Predictor = EPQ-R (Extraversion).

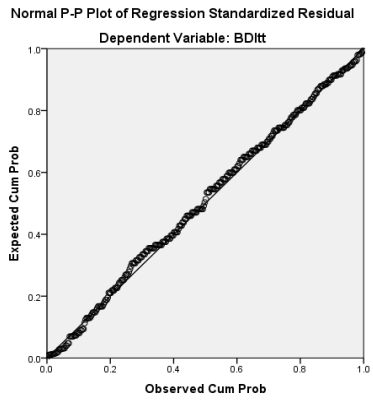


Figure 10.1: Histogram depicting the distribution of residual scores on Depression (BDI-II). Predictor = EPQ-R (Neuroticism).

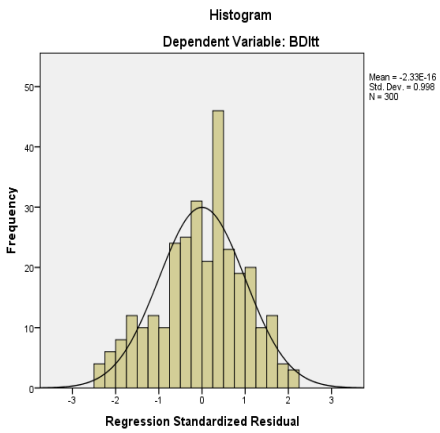
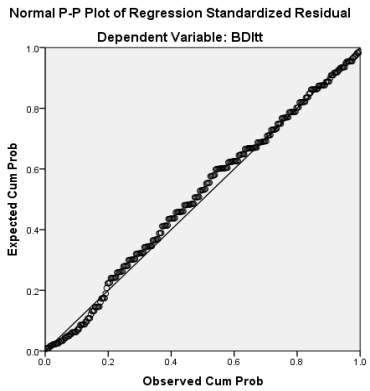


Figure 10.2: Graph depicting the distribution of residual scores on Depression (BDI-II). Predictor = EPQ-R (Neuroticism).



The regression model with Personality (Psychoticism) (F=173.7; p<.01), Personality (Extraversion) (F=101.0; p<.01) andPersonality (Neuroticism) (F=62.3; p<.01) as predictors and Perceived Stress as the criterion emerged to be statistically significant. The R, R square and the change statistics are presented in Table- 10.1 to 10.2.

Tables- 10.1: R square, change statistics and Durbin-Watson statistics in the prediction of Perceived Stress (PSS). Predictor(s) = EPQR (P), EPQR (E), EPQR (A) for the whole samples.

Predictors	**Criterion variables**	**$R^{2\ change}$**	**F-Change**	**Sig**	**Durbin Watson**
Psychoticism	Percieved Stress	.37	173.7	.00	1.74
Extraversion		.25	101.0	.00	1.80
Neuroticism		.17	62.3	.00	1.64

Table-10.2: Beta values and Collinearity Statistics in the prediction of scores on Perceived Stress (PSS) for the whole samples.

Predictors	Standardized Coefficients	t	Sig.	Collinearity Statistics	
	Beta			Tolerance	VIF
Psychoticism	.607	13.181	.000	1.000	1.000
Extraversion	.503	10.050	.000	1.000	1.000
Neuroticism	.416	7.893	.000	1.000	1.000

Figure 11.1: Histogram depicting the distribution of residual scores on Perceived Stress (PSS). Predictor = EPQ-R (Psychoticism).

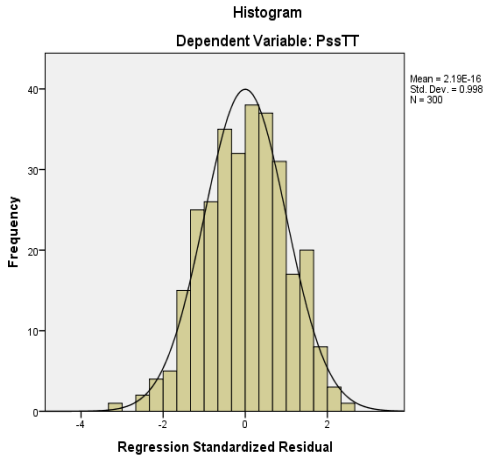


Figure 11.2: Graph depicting the distribution of residual scores on Perceived Stress (PSS). Predictor = EPQ-R (Psychoticism).

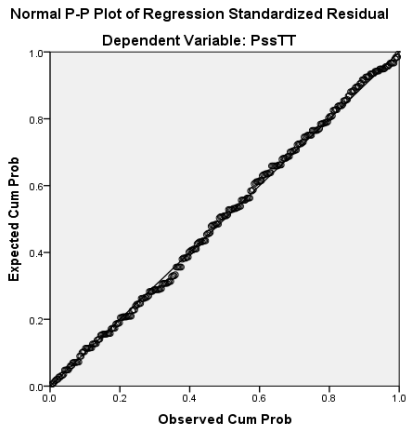


Figure 12.1: Histogram depicting the distribution of residual scores on Perceived Stress (PSS). Predictor = EPQ-R (Extraversion).

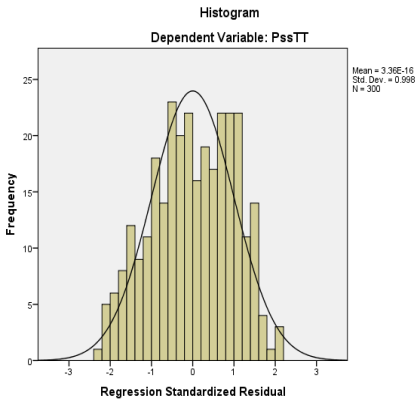


Figure 12.2: Graph depicting the distribution of residual scores on Perceived Stress (PSS). Predictor = EPQ-R (Extraversion).

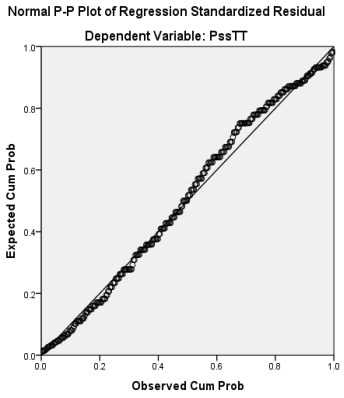


Figure 13.1: Histogram depicting the distribution of residual scores on Perceived Stress (PSS). Predictor = EPQ-R (Neuroticism).

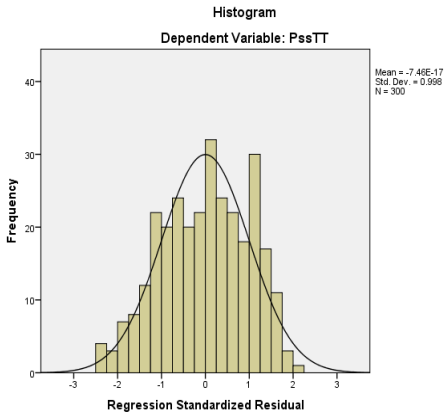
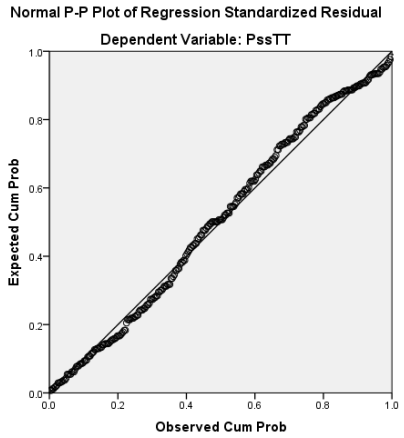


Figure 13.2: Graph depicting the distribution of residual scores on Perceived Stress (PSS). Predictor = EPQ-R (Neuroticism).



The Durbin-Watson statistics and the Collinearity statistics (Table 10.1 & 10.2) supported by the normality and the homogeneity of the regression slope (Figure-11.1 – 13.2) revealed that on scores of Perceived stress with Personality (Psychoticism) as a predictor explain 37% of variances, Personality (Extraversion) explain 25% and Personality (Neuroticism) explain 17%. Studies indicate that particular personality styles can sometimes increase the likelihood of stressful even. For example, an individual with a rejection-sensitive personality style who is prone to interpreting events with a bias toward rejection and abandonment by others are more likely to manifest dependent behaviours which in turn cause others to reject them (Parker, 2014).

The regression model with Personality (Psychoticism) ($F=60.2$; $p<.01$), Personality (Extraversion) ($F=123.8$; $p<.01$) and Personality (Neuroticism) ($F=86.6$; $p<.01$)as predictors and Task oriented coping style as the criterion emerged to be statistically significant. The R, R square and the change statistics are presented in Table- 11.1.

The Durbin-Watson statistics and the Collinearity (Table- 11.1 & 11.2) statistics supported by the normality and the homogeneity of the regression slope (Figure- 14.1 – 16.2) revealed that on scores of Task oriented coping style with

Personality (Psychoticism) as a predictor explain 17% of variances, Personality (Extraversion) explain 29% and Personality (Neuroticism) explain 22%.

Tables-11.1: R square, change statistics and Durbin-Watson statistics in the prediction of Task oriented coping {CISS (T)}. Predictor(s) = EPQR (P), EPQR (E), EPQR (A) for the whole samples.

Predictors	**Criterion variables**	**$R^{2\ change}$**	**F-Change**	**Sig**	**Durbin Watson**
Psychoticism	Task oriented coping	.17	60.2	.00	1.43
Extraversion		.29	123.8	.00	1.89
Neuroticism		.22	86.6	.00	1.79

Table-11.2: Beta values and Collinearity Statistics in the prediction of scores on Task oriented Coping {CISS (T)} for the whole samples.

Predictors	**Standardized Coefficients**	**t**	**Sig.**	**Collinearity Statistics**	
	Beta			**Tolerance**	**VIF**
Psychoticism	-.410	-7.758	.000	1.000	1.000
Extraversion	-.542	-11.125	.000	1.000	1.000
Neuroticism	-.475	-9.308	.000	1.000	1.000

Figure 14.1: Histogram depicting the distribution of residual scores on Coping {CISS (T)}. Predictor = EPQ-R (Psychoticism).

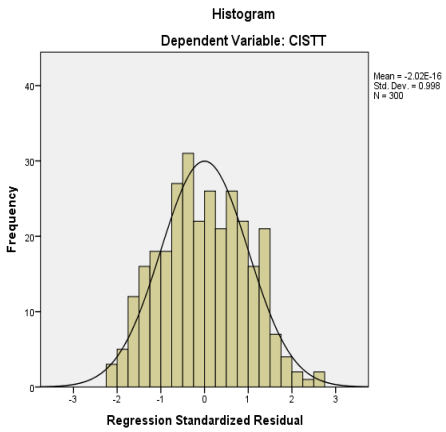


Figure 14.2: Graph depicting the distribution of residual scores on Coping {CISS (T)}. Predictor = EPQ-R (Psychoticism).

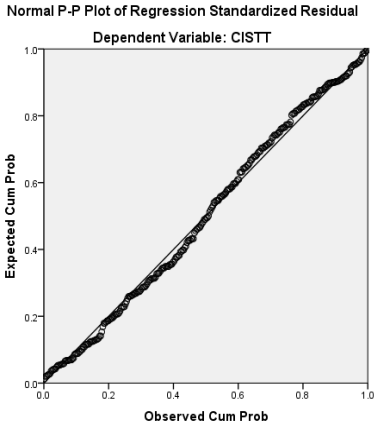


Figure 15.1: Histogram depicting the distribution of residual scores on Coping {CISS (T)}. Predictor = EPQ-R (Extraversion).

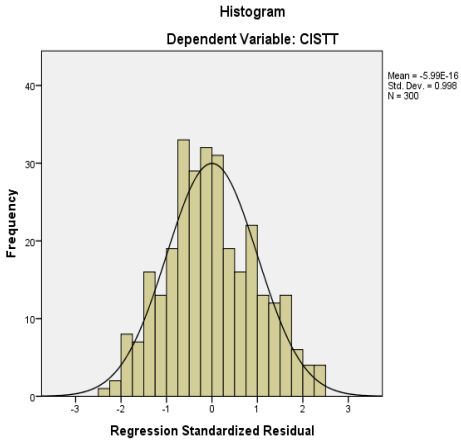


Figure 15.2: Graph depicting the distribution of residual scores on Coping {CISS (T)}. Predictor = EPQ-R (Extraversion).

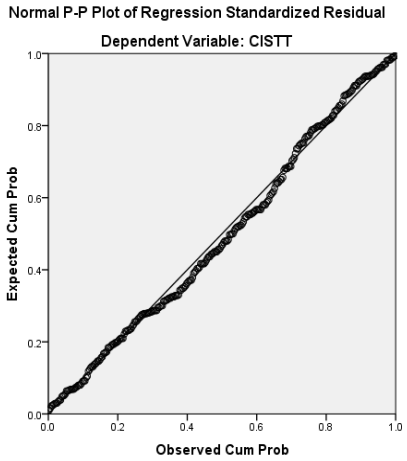


Figure 16.1: Histogram depicting the distribution of residual scores on Coping {CISS (T)}. Predictor = EPQ-R (Neuroticism).

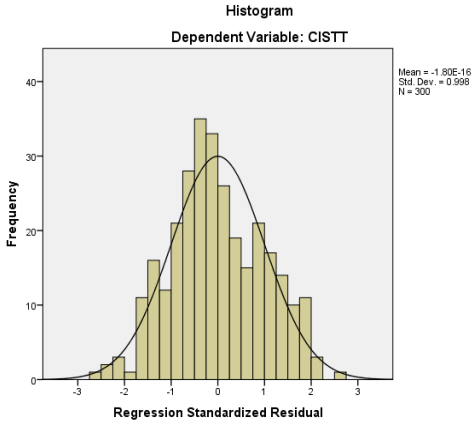
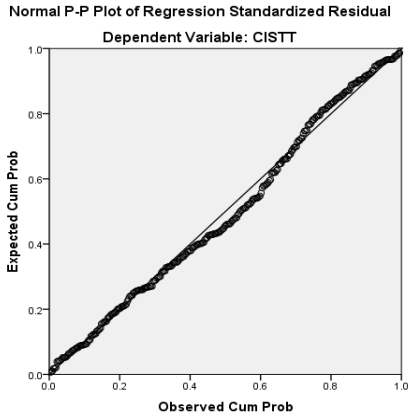


Figure 16.2: Graph depicting the distribution of residual scores on Coping {CISS (T)}. Predictor = EPQ-R (Neuroticism).



The regression model with Personality (Psychoticism) (F=171.6; p<.01), Personality (Extraversion) (F=83.3; p<.01) andPersonality (Neuroticism) (F=63.9; p<.01) as predictors and Emotional oriented coping style as the criterion emerged to be statistically significant. The R, R square and the change statistics are presented in Table- 12.1.

The Durbin-Watson statistics and the Collinearity statistics (Table 12.1 & 12.2) supported by the normality and the homogeneity of the regression slope (Figure-17.1 – 19.2) revealed that on scores of Emotional oriented coping style with Personality (Psychoticism) as a predictor explain 36% of variances, Personality (Extraversion) explain 22% and Personality (Neuroticism) explain 17%.

Table-12.1: R square, change statistics and Durbin-Watson statistics in the prediction of Task oriented coping {CISS (E)}. Predictor(s) = EPQR (P), EPQR (E), EPQR (A) for the whole samples.

Predictors	Criterion variables	$R^{2\ change}$	F-Change	Sig	Durbin Watson
Psychoticism	Emotional Oriented coping	.36	171.6	.00	1.82
Extraversion		.22	83.3	.00	1.87
Neuroticism		.17	63.9	.00	1.68

Table-12.2: Beta values and Collinearity Statistics in the prediction of scores on Task oriented Coping {CISS(E)} for the whole samples.

Predictors	Standardized Coefficients	t	Sig.	Collinearity Statistics	
	Beta			Tolerance	VIF
Psychoticism	.605	13.101	.000	1.000	1.000
Extraversion	.467	9.124	.000	1.000	1.000
Neuroticism	.420	7.996	.000	1.000	1.000

Figure 17.1: Histogram depicting the distribution of residual scores on Coping {CISS (E)}. Predictor = EPQ-R (Psychoticism).

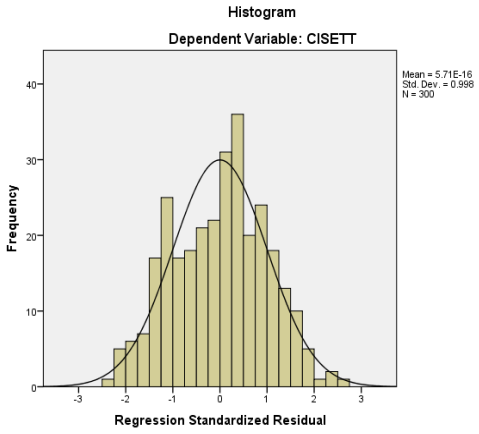


Figure 17.2: Graph depicting the distribution of residual scores on Coping {CISS (E)}. Predictor = EPQ-R (Psychoticism).

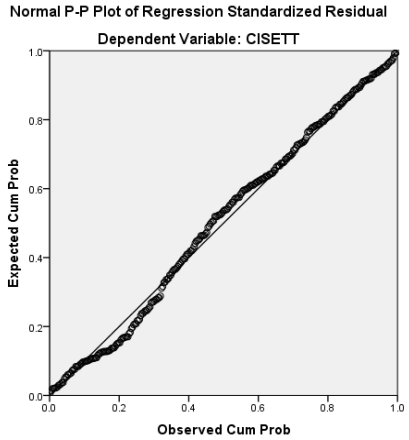


Figure 18.1: Histogram depicting the distribution of residual scores on Coping {CISS (E)}. Predictor = EPQ-R (Extraversion).

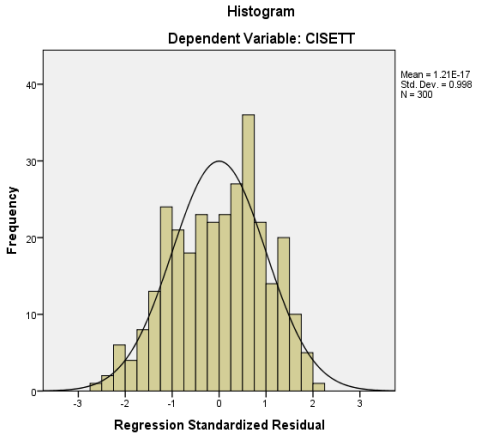


Figure 18.2: Graph depicting the distribution of residual scores on Coping {CISS (E)}. Predictor = EPQ-R (Extraversion).

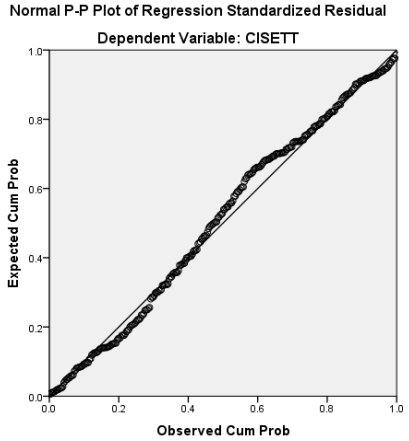


Figure 19.1: Histogram depicting the distribution of residual scores on Coping {CISS (E)}. Predictor = EPQ-R (Neuroticism).

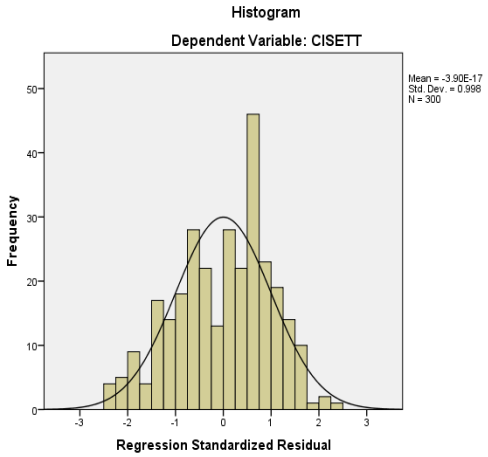
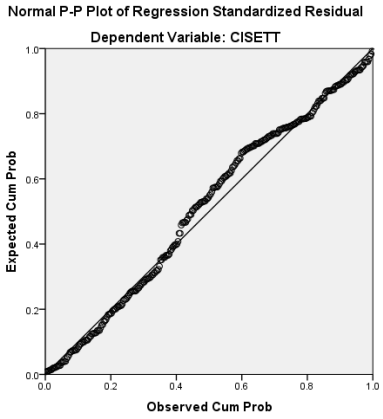


Figure 19.2: Graph depicting the distribution of residual scores on Coping {CISS (E)}. Predictor = EPQ-R (Neuroticism).



The regression model with Personality (Psychoticism) (F=71.3; p<.01), Personality (Extraversion) (F=143.8; p<.01) andPersonality (Neuroticism) (F=100.1; p<.01) as predictors and Avoidance oriented coping style as the criterion emerged to be statistically significant. The R, R square and the change statistics are presented in Table-13.1.

The Durbin-Watson statistics and the Collinearity statistics (Table- 13.1 to 13.2) supported by the normality and the homogeneity of the regression slope (Figure-20.1 – 22.2) revealed that on scores of Avoidance oriented coping style with Personality (Psychoticism) as a predictor explain 19% of variances, Personality (Extraversion) explain 32% and Personality (Neuroticism) explain 25%.

Personality does influence coping in manyways, however, some of which occur prior tocoping. Even prior to coping, personality influences the frequency of exposure to stressors, the type of stressors experienced, and appraisals (Vollrath 2001). Neuroticism predicts exposureto interpersonal stress, and tendencies to appraise events as highly threatening and copingresources as low (Bolger & Zuckerman 1995, Grant & Langan-Fox 2007). Extraversion, conscientiousness, and openness all relate to perceiving events as challenges rather than threats and to positive appraisals of coping resources (Penley&Tomaka 2002, Vollrath 2001). Unsurprisingly, high neuroticism plus low conscientiousness predicts especially high stress exposure and threat appraisals, and low neuroticism plus high extraversion or high conscientiousness predicts especially low stress exposure and threat appraisals (Grant &Langan-Fox 2006, Vollrath&Torgersen 2000)

Table-13.1: R square, change statistics and Durbin-Watson statistics in the prediction of Task oriented coping {CISS (A)}. Predictor(s) = EPQR (P), EPQR (E), EPQR (A) for the whole samples.

Predictors	**Criterion variables**	**$R^{2\ change}$**	**F-Change**	**Sig**	**Durbin Watson**
Psychoticism	Avoidance Oriented coping	.19	71.3	.00	1.35
Extraversion		.32	143.8	.00	1.98
Neuroticism		.25	100.1	.00	1.86

Table-13.2: Beta values and Collinearity Statistics in the prediction of scores on Task oriented Coping {CISS (A)} for the whole samples.

Predictors	**Standardized Coefficients**	**T**	**Sig.**	**Collinearity Statistics**	
	Beta			**Tolerance**	**VIF**
Psychoticism	.439	8.442	.000	1.000	1.000
Extraversion	.571	11.994	.000	1.000	1.000
Neuroticism	.502	10.007	.000	1.000	1.000

Figure 20.1: Histogram depicting the distribution of residual scores on Coping {CISS (A)}. Predictor = EPQ-R (Psychoticism).

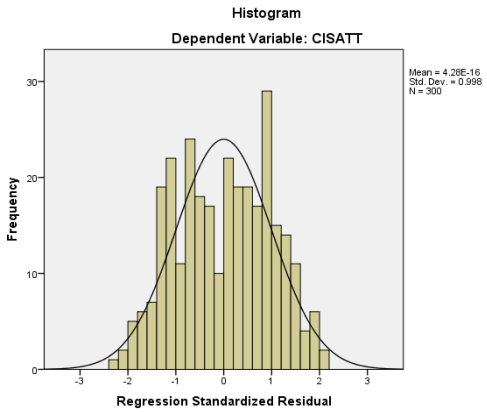


Figure 20.2: Graph depicting the distribution of residual scores on Coping {CISS (A)}. Predictor = EPQ-R (Psychoticism).

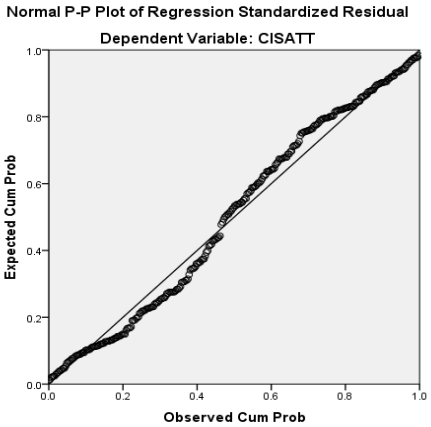


Figure 21.1: Histogram depicting the distribution of residual scores on Coping {CISS (A)}. Predictor = EPQ-R (Extraversion).

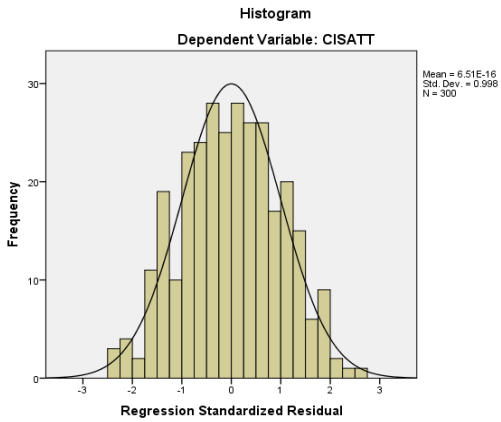


Figure 21.2: Graph depicting the distribution of residual scores on Coping {CISS (A)}. Predictor = EPQ-R (Extraversion).

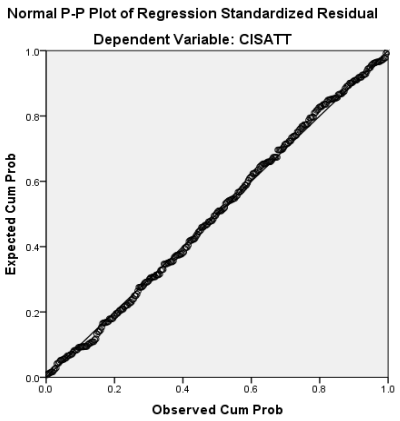


Figure 22.1: Histogram depicting the distribution of residual scores on Coping {CISS (A)}. Predictor = EPQ-R (Neuroticism).

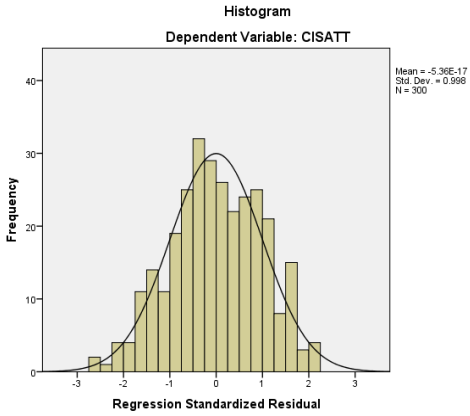
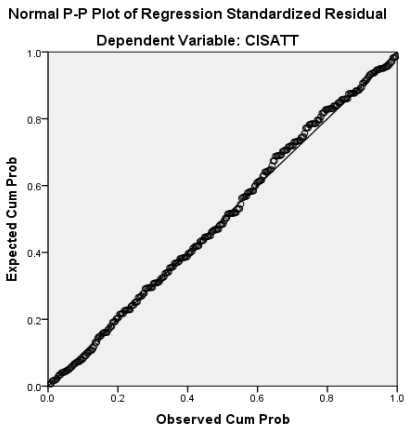


Figure 22.2: Graph depicting the distribution of residual scores on Coping {CISS (A)}. Predictor = EPQ-R (Neuroticism).



The regression model with Perceived Stress (F=972.8; p<.01) as predictor and Anxiety and Depression as the criterion emerged to be statistically significant. The R, R square and the change statistics are presented in Table-14.1.

The Durbin-Watson statistics and the Collinearity statistics (Table 14.1 to 14.2) supported by the normality and the homogeneity of the regression slope (Figure-23.1 – 24.2) revealed that on scores of Anxiety with Perceived Stress as a predictor explain 76% of variances and Depressionexplain 77%.

Perceived stress is a contributing factor to the depression seen in the general public. Individuals feel the pressures and anxiety of stress and tend to react by performing negative health behaviors. As stressors reoccur, performing behaviours such as alcohol consumption and tobacco use can increase the rate of depression (Nonis et al., 1998; Cohen, 1996, Cohen & Herbert, 1996; Van Eck et al., 1996). Coping with stress may include engaging in negative health behaviors such as smoking, increased alcohol consumption, drug use, overeating and poor nutrition, physical inactivity, sleep deprivation, and increased caffeine intake(Hall et al., 2006; Nonis et al., 1998; Cohen, 1996, Cohen & Herbert, 1996; Van Eck et al., 1996). Many of these behaviors are associated with depression and possible thoughts of suicide (Andrews & Wilding, 2004; Cohen & Herbert, 1996)

Tables-14.1: R square, change statistics and Durbin-Watson statistics in the prediction of Anxiety (BAI) and Depression (BDI) for the whole samples. Predictor = PSS.

Predictors	**Criterion variables**	**$R^{2\ change}$**	**F-Change**	**Sig**	**Durbin Watson**
Perceived Stress	Anxiety	.76	972.8	.00	1.11
	Depression	.77	972.8	.00	1.08

Table-14.2: Beta values and Collinearity Statistics in the prediction of scores on Anxiety (BAI) and Depression (BDI) for the whole samples.

Predictors	Standardized Coefficients	t	Sig.	Collinearity Statistics	
	Beta			Tolerance	VIF
Perceived Stress	Anxiety	.912	38.29	.000	1.000
	Depression	.875	31.190	.000	1.000

Figure 23.1: Histogram depicting the distribution of residual scores on Anxiety (BAI). Predictor = PSS.

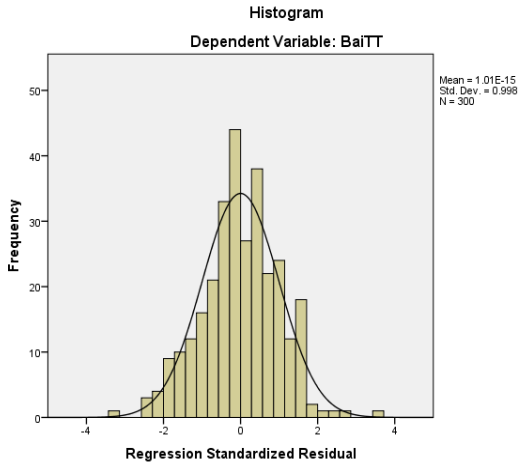


Figure 23.2: Graph depicting the distribution of residual scores on Anxiety (BAI). Predictor = PSS.

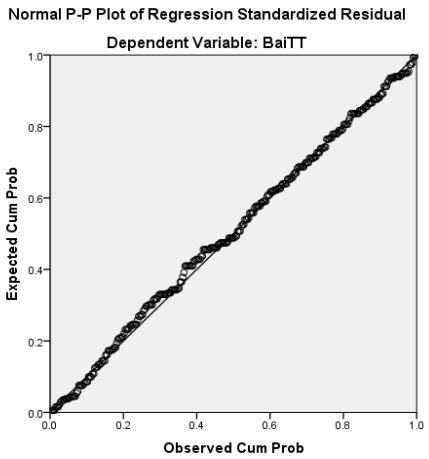


Figure 24.1: Histogram depicting the distribution of residual scores on Depression (BDI-II). Predictor = PSS.

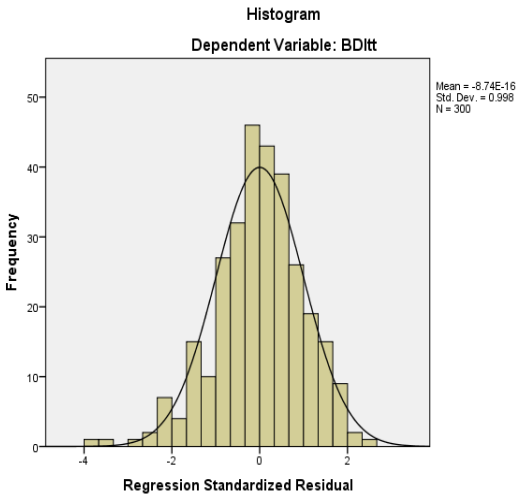
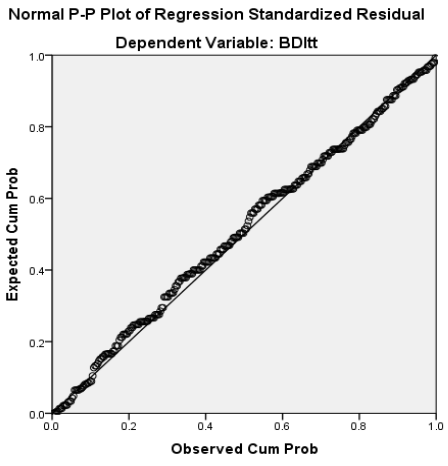


Figure 24.2: Graph depicting the distribution of residual scores on Depression (BDI-II). Predictor = PSS.



The overall findings met the objectives of the study and can be summarized in the light of the outcome of the analyses of tobacco dependency among Mizo Adults

which highlighted mean significant differences between groups, significant correlation between dependent variables, and also among the selected comparison groups on dependents variables.

The result findings of this study are summarized in the following in relation to the theoretical expectation (hypotheses) set forth for the study:

(i) Female exhibited greater scores than Male on various psychological variables {anxiety, depression, stress, coping (task oriented, emotional oriented and avoidance oriented) and personality (psychoticism, extraversion and neuroticism)}; this finding supported the theoretical expectation (hypothesis) No. 1 set forth for the study{there will be gender (male and female) differences on psychological variables (personality, stress, coping, anxiety and depression}.

A comprehensive review of almost all general population studiesconducted to date in the United States of America, Puerto Rico, Canada, France, Iceland,Taiwan, Korea, Germany and Hong Kong, reported that women predominated over menin lifetime prevalence rates of major depression (Piccinelli & Homen, 1997). Women also have significantly higher rates of post traumatic stress disorder (PTSD) thanmen (Kessler et al, 1995). General population surveys have reported that around 1 inevery 12 adults experiences PTSD at some time in their lives and women's risk ofdeveloping PTSD following exposure to trauma is approximately twofold higher thanmen's (Breslau et al, 1998), and thus paralleling the difference found in rates ofdepression.

Some researchers (Day & Livingstone, 2003; Matud, 2004) have suggested that women tend to use emotion-focused coping more than men, who generally use problem-focused coping. It has been suggested that this could be a reason behind why women tend to perceive more stress in their lives, as well as having more problems with anxiety and depression than men (Hamilton & Fagot, 1998; Matud, 2004; Sandanger, Nygard, Sorenson, &Torbjorn, 2004).Gender differences on traits relatedto Neuroticism have been consistently reposed with women scoring higherthan men (Lynn & Martin, 1997). Feingold (1994) found thatwomen scored higher in anxiety. In areview of general population surveysby Nolen-Hoeksema (1987)reported that women scorehigher in symptoms of depression. Generalized anxiety disorder,

panic disorder with or without agoraphobia, phobias,major depression, dysthymic disorder and borderline personality disorder are all diagnosed substantially more often in women than,in men (American Psychiatric Association, 1994).

(ii) Female exhibited greater scores on Personality (extraversion and neuroticism) as compared to Males, scores are highest among female high dependent smokers followed by high dependent smokeless tobacco users, low dependent smokers and smokeless tobacco users and lowest scores are exhibited by non-users; this finding is in conformity with the theoretical expectation (hypothesis) No. 2 set forth for the study {Neuroticism and extraversion (of Personality Scale) score may be higher in female than male, highest among high dependent smokers and smokeless tobacco users, followed by low dependent smokers and smokeless tobacco users, and lowest among non-users}.

Female also scored higher on Psychoticism (which was not hypothesized) but is supported by the findings of Sharifi et al., 2012 in which independent associations were observed between female gender, stressful life events and dimensions of depression, anxiety, hostility, obsessive-compulsive symptoms and interpersonal sensitivity and psychoticism. There was a trend toward an association between higher educational levels and the severity of psychotic symptoms, particularly paranoid ideation which were in contrast to other studies Lynn and Martin (1997).

Gender differences in personality traits have been documentedin many empirical studies. Women tend to score higher on neuroticism (Goodwin &Gotlib, 2004; Heaven &Shochet, 1995; Lippa, 2010), which leads them to experience more negative affect than men. Although women experience more negative affect than men, neuroticism is also related to a reduction in the attempt to repair, dampen, or maintain emotions, especially in men (Kokkonen&Pulkkinen, 2001) which are also a character trait of extraversion.

Certain personalitytraits are related to substance use like tobacco and alcohol (Brook et al., 1998b; Farrell et al., 1992; Hawkins et al., 1985). In an early review of literature, Smith (1970) noted that smokers generally scored higher on measures of Extraversion, but his conclusions were mixed regarding differences between smokers

and nonsmokers on Neuroticism. Gilbert (1995) reviewed studies conducted since the Smith (1970) review and concluded that only a little more than half of these studies found that smokers scored significantly higher than nonsmokers on assessments of Psychoticism, Neuroticism and Extraversion. Certain adolescent personality traits are also related to adolescent illegal drug use (Brook et al., 1998b; Farrell et al., 1992; Hawkins et al., 1985).

(iii) Female exhibited greater mean scores on Perceived stress measures as compared with Males; scores are highest among female high dependent smokers followed by high dependent smokeless tobacco users, low dependent smokers and smokeless tobacco users and lowest scores are exhibited by non-users; this finding supported the theoretical expectation (hypothesis) No.3 set forth for the study (perceived stress may be higher in female than male, highest among high dependent smokers and smokeless tobacco users, followed by low dependent smokers and smokeless tobacco users, and lowest among non-users).

When it comes to the perception of stress, females with traditional gender roles perceive significantly higher levels of stress than males with traditional gender roles. Males with traditional gender roles perceive significantly lower levels of stress than females with traditional gender roles(Day & Livingstone, 2003).Reviewed articles agree women and girls tend to smoke or use tobacco as a "buffer" against negative feelings, while men smoke more from habit or to enhance positive sensations (Pande, 2003).Greater posttraumatic stress symptom levels are related to higher tobacco dependency levels (Beckham et al., 1995; Schnurr&Vielhauer, 1999**).** Female exhibited greater mean scores on avoidance oriented coping and emotional oriented coping styles than Males; whereas Males showed greater mean scores on task oriented coping styles than females; trend of scores on psychological variables are highest among female high dependent smokers followed by high dependent smokeless tobacco users, low dependent smokers and smokeless tobacco users and lowest scores are exhibited by non-users; this finding supported the theoretical expectation (hypothesis) No.4 set forth for the study (female may be higher in Avoidance-Oriented coping and Emotional-Oriented coping; low in Task-Oriented coping male and same trend is expected on high dependent smokers and smokeless

tobacco users, followed by low dependent smokers and smokeless tobacco users, and lowest among non-users).

Studies have suggested that when it comes to using the emotion-focused and avoidance coping style, females with traditional gender roles score significantly higher than males with traditional gender roles and males with traditional gender roles score significantly lower than females with traditional gender roles. Women may utilize emotional support obtained from others more than men while men may utilize instrumental and informational support (task oriented) obtained from others more than women (Day & Livingstone, 2003).Research suggests that in comparison with men, women report having more problems coping with stress and relying more on smoking as a coping response and men have a broader repertoire of coping responses than do women (Grunberg, Winders, &Wewers, 1991; McDaniel & Richards, 1990).

(iv) Female exhibited greater scores on Anxiety and Depression as compared to Males, scores are highest among female high dependent smokers followed by high dependent smokeless tobacco users, low dependent smokers and smokeless tobacco users and lowest scores are exhibited by non-users; this finding is in conformity with the theoretical expectation (hypothesis) No. 5 set forth for the study (Anxiety and depression may be higher in female than male, highest among high dependent smokers and smokeless tobacco users, followed by low dependent smokers and smokeless tobacco users, and lowest among non-users).

Nolen-Hoeksema (1987) found that women were more likelythan men to be depressed across a range of countries, although themagnitude of the sex difference ratio varied markedly. Depression and anxiety are common comorbid diagnoses and women have higherprevalence than men of both lifetime and 12 month comorbidity of three or more disorders(Kessler et. al., 1994, WHO & ICPE, 2000). Studies indicate that there may be gender differences in the links between anxiety and substance use and related problems (Armstrong & Costello, 2002). One study found that anxiety was associated with increased risk for the development of tobacco dependence (Sonntag et al., 2000). Literature reveal that female that had experienced depression or family violence were more likely to smoke than males with similar backgrounds (Simantov et al., 2000). Moreover, affective symptoms such as

depression and anxiety have been linked to increased rates of tobacco use, increased rates of smoking and tobacco initiation, and difficulty quitting (e.g., experiencing more withdrawal symptoms and earlier relapse (Black, Zimmerman, & Coryell, 1999; Brandon, Tiffany, Obremski, & Baker, 1990; Glassman & Covey, 1996).

(v) There are significant interactions between gender (male and female) and level of tobacco dependency on the psychological variables (personality, stress, coping, anxiety and depression), this finding is in conformity with the theoretical expectation (hypothesis) No. 6 set forth for the study.

Tobacco has a synergistic effect on psychological and physiological risk factors. Stress and the use of tobacco can interact in dangerous ways. For men, nicotine can increase the magnitude of heart rate reactivity to stress. For women, it can reduce heart rate but increase blood pressure responses, also an adverse reactivity pattern. Cigarette smoking interacts synergistically with depression; smoking is now considered to be a potential cause of depression, especially in young people (Goodman &Capitman, 2000). It is also related to an increase in anxiety, the chances of panic attacks and other anxiety disorders are greatly increased (J.G. Johnson et al., 2000). Women have much higher rates of affective disorders than do men. For instance, their rate of lifetime major depression is about twice that of men (APA, 1994). Depressed tobacco users report having more stress in their lives, fewer coping resources, and lower self-efficacy for quitting than do non-depressed tobacco users (Haukkala, Uutela, Vartiainen, McAlister, & Knekt, 2000; Kinnunen, Doherty, Militello, & Garvey, 1996). This suggests that women's greater affective vulnerabilities may produce more severe or prolonged tobacco-withdrawal symptoms (Gritz, Nielson, & Brooks, 1996; Piasecki, Fiore, & Baker, 1998; and Repsher & Group TTNS, 1994 for contradictory results). Feldner et al., 2007 suggested that smoking or smokeless tobacco use behavior may increase the risk for anxiety psychopathology and anxiety may increase smoking behavior. A number of studies implicate anxiety as an integral component of the nicotine withdrawal syndrome (Gilbert et al., 1998a, b; Hughes, 1992; Hughes et al., 1991; Hughes &Hatsukami, 1986). There is evidence suggesting that high levels of trait anxiety are related to coping strategies for substance use, including tobacco use (Comeau et al., 2001; Steward &Zeitlin, 1995). Greater stress symptom levels are related to higher smoking

levels (Beckham et al., 1995; Schnurr&Vielhauer, 1999). Young urban Vietnamese women said they might start smoking if they become “very unhappy” (Morrow et al., 2002). Tobacco use behaviour is thought of to be in part an avoidance/escape response to negative emotional events as the experience of stress and anger. This escape response is a potential coping response, and although it initially provides relief, it has long term negative health consequences. However, when the reinforcement effects become powerful, the response may generalize to other negative emotional states, such as anxiety and sadness. Personality trait variables have also long been evaluated for their potential to provide insight into tobacco use and its cessation (Eysenck, 1980b; Gilbert, 1995; Smith, 1970).

The personality trait of neuroticism is known to be associated with anxiety and depression (Clark et al., 1994). However, there have been theoretical predictions that extraversion and neuroticism interact to affect anxiety (Wallace et al., 1991). Avoidance coping, such as not thinking about the problem, relying on externalization and wishful thinking, and engaging in emotional discharge to vent negative affect (Moos, 1993) is associated with greater PTSD (Anxiety disorder) severity (Bryant & Harvey, 1995; Sutker et al., 1995), personality disorders (Vollrath, Alnaes, &Torgersen, 1998), violence risk (Kotler et al., 1993), hostility, suicide (Linehan, Chiles, Egan, Devine &Laffau, 1986), and comorbid psychopathology among substance use patients including tobacco use (Mezzich et al., 1995).

The results clearly explained the cultural specific problems of the selected population – the Mizo, regarding tobacco dependency and its relation with psychological variables like anxiety, depression, stress, coping and personality.On the whole the findings of the study provided the component empirical bases that are sufficient enough in conformity to the theoretical expectations as set forth for the conduction of the study.

The present study was designed to illustrate ‘Tobacco dependency among Mizo adults: a psychological analysis’ and explicate the level of tobacco dependency and the types of tobacco used with its relation to different psychological variables like anxiety, depression, stress, coping and personalityamong Male and Female Mizo adults who are high tobacco dependent smoker and smokeless tobacco users, low dependent smoker and smokeless tobacco users and the non-users.

Chapter- V
SUMMARY AND CONCLUSION

The study was designed with manifold objectives. The study aimed to elucidate the psychometric adequacy of the behavioural measures of : (i) Beck Anxiety Inventory Test (Beck, A. T. & Steer, R. A., 1990); (ii) Beck Depression Inventory–II (Beck et al., 1996); (iii) Perceived Stress Scale (Cohen, S., & Williamson, G., 1988); (iv) Coping Inventory for stressful situation (CISS, Endler& Parker, 1999); (v) Eysenck Personality Questionnaire-Revised (H.J. Eysenck *&* S. B. G. Eysenck*,* 1991) for measurement purposes in the target population – the Mizo.These analyses revealed that specific items of all measures were endorsed within the optimal limits.

To achieve the objectives, Three Hundred (300) Mizo adults (150 males and 150 females) with their age ranging between 40-50 years were randomly selected to serve as subjects for the present study on the basis of multi stage sampling procedure from Aizawl City, the capital of Mizoram. Since a sample of true nature is desired, tobacco use have the highest prevalence among the age group of 40-50 years (Srivastava et al, 2004), hence, they were regarded as true representative for the present study. With the objective to equate/match the sample and obtain a representative sample, a number of background information of the subject like age, gender, marital status, educational qualification, occupation, average monthly income, details of tobacco use (type, age of onset, average number of cigarettes/bidis/sachets used per day, number of years of regular tobacco use, average number of tobacco smoked or chewed per day in the last one month), severity of tobacco use, family history of tobacco use in first-degree relatives were recorded. In the desire to mention the details of tobacco use which is not included in the design, it was included as covariate in the background demographic variables.

The preliminary psychometric analyses of the behavioural measures included the analysis of (i) item-total coefficient of correlation (as an index of internal consistency and item validity) was ascertained for the scales/subscales of the behavioural measures with the criterion of items showing item-total coefficient of correlation $\geq .01$ for the whole sample to be retained for further analysis, (ii) Reliability coefficients (Cronbach alphas & Split-half)of the specific subscales, (iii) inter-scale relationships (in the instances where there were two or more sub-scales/ sub-factors). Following the broad format of analysis, the psychometric properties of

the five classes of behaviour measures of (i) anxiety, (ii) depression, (iii) stress (iv) coping styles and (v) personality were analyzed by employing IBM-SPSS.

These analyses were aimed with the objective (i) to find consistency in results, (ii) to evolve theoretical foundations for the measurement of the underlying theoretical construct(s) and (iii) to find empirical basis for comparability of the test scales for cross-cultural studies in view of the theoretical and methodological foundations that the psychological test(s) of proven psychometric adequacy for a given population, if transported and employed for measurement purposes in another cultural milieu, may not carry their identical psychometric properties (Witkin& Berry, 1975).

Embedded within the preliminary psychometric analyses was the objective to elucidate the relationships between the behavioural measures with the objective to elucidate the cluster(s) of behavioural measures that would be accounted for the correlations of anxiety, depression, stress, coping (task, emotional and avoidant oriented coping) and personality (Psychoticism, Neuroticism and Extraversion)to form the basis for factor analysis. Furthermore, the study elucidated the predictive validity of the test scores by employing Durbin Watson regression analyses and collinearity statistics and using personality (Psychoticism, Neuroticism and Extraversion) and perceived stress as predictors and anxiety, depression, stress and coping (task, emotional and avoidant oriented coping) as the criterion.

In addition to the correlation inferences, the study aimed to elucidate the cause and effect relationship, by way of incorporating two-way classification (2 X 5 ANOVA) of variables of ‘gender’ (Male and Female) and ‘Levels of tobacco dependency’ (‘high tobacco dependent smokers’, ‘low tobacco dependent smokers’, ‘high dependent smokeless tobacco users’, ‘low dependent smokeless tobacco users’ and ‘non-users’) on the scales and sub-scales measure of Anxiety, Depression, Perceived stress, coping styles - Task oriented coping, Emotional oriented coping and Avoidance oriented coping and Personality – Psychoticism, Personality –Extraversion and Personality – Neuroticism (measures of the dependent variables). For every ANOVA, Levene’s Test for Homogenity of Variance and Browns-Forsythe Robust Test for Equality of Variances were employed.

Psychometric analyses of the behavioural measures revealed that the tests (as incorporated in the present study) find their replicability in the project population for the measurement of the theoretical constructs. The trends of mean differences on the various scales/sub-scales measures of the behavioural gamut revealed: (i) Female indicated more scores than males on anxiety, depression, stress, coping (emotional oriented coping and avoidance oriented coping) and personality (psychoticism, neuroticism and extraversion) than Males (ii) Male manifested greater scores than Females on coping style - task oriented coping (iii) High tobacco dependent manifested highest scores on anxiety, depression, stress, coping (emotional oriented coping and avoidance oriented coping) and personality (psychoticism, neuroticism and extraversion) as compared to low dependent tobacco users and non-users (iv) Smokers manifested highest scores on anxiety, depression, stress, coping (emotional oriented coping and avoidance oriented coping) and personality (psychoticism, neuroticism and extraversion) as compared to smokeless tobacco users and non-users (v) Male non-user manifested highest score on Task oriented coping and lowest on anxiety, depression, stress, coping (emotional oriented coping and avoidance oriented coping) and personality (psychoticism, neuroticism and extraversion).

The psychometric properties of behavioural measures were computed which confirmed the adequacies of the psychometric properties of the selected scales for measurement purposes for the present study. The reliability coefficients emerge to be strong indicating the dependability of the test scales for measurement purposes in the project population (Mizo). In sum, the Item-Total coefficient correlation, the reliability coefficients (Cronbach Alpha and Spearman Brown Coefficient), and the Inter-scales/subscales of Becks Anxiety Inventory (BAI), Becks Depression Inventory –II (BDI-II), Perceived Stress Scale (PSS), Coping inventory for stressful situations (CISS) and Eysenck Personality Questionnaire – Revised (EPQ-R) are confirming to the findings reported in literature(Beck and Steer, 1991, Beck et al.,1996, Eleni et al., 2001, Endler& Parker, 1999,H. J. Eysenck *&* S. B. G. Eysenck*,* 1991).

The bivariate relationships between the scales/subscales of the behavioural measures were computed and it indicated the relationships among the scales/subscales of the behavioural measures accounting for male and female 'high tobacco dependent smokers', 'low tobacco dependent smokers', 'high dependent

smokeless tobacco users', 'low dependent smokeless tobacco users' and 'non-users'. Anxiety, Depression, Perceived stress, Personality – Psychoticism, Personality – Extraversion and Personality – Neuroticism, Emotional oriented coping and Avoidance oriented coping all showed significant positive relationship with each other, where a very high positive relationship is found between Anxiety and Depression at 92%. They all appeared to have significant negative relationship with Task oriented coping with highest negative relationship with anxiety.

Holahan et al. (2005) showed that avoidant coping is positively associated with depressive symptoms in a ten year longitudinal study. Their study examined the coping styles, life stressors and depressive symptoms of 1,211 participants over a ten year period. Penland et al. (2000) found in their university study that participants experienced greater depressive symptoms when they engaged in an avoidant coping style such as wishful thinking. Crockett et al., (2007) study also revealed strong positive associations between avoidant coping and psychological distress. Participants were shown to have increased symptoms of anxiety and depression when they engaged in avoidant coping, as opposed to participants that engaged in problem-focused coping. Research shows to confirm one of the main stress prognostics may be anxiety, apprehension deflagrated by something the individual understood as a threat to his or her integrity. Anxiety is an emotional experience opposing the possibility of living future situations which may be unpleasant to the individual. Anxiety would be one of the affective components from the stress process's, which ends up occurring when the individual's response capacity is exceeded.The stress and coping process has clearer health ramifications when we consider maladaptive coping strategies; research suggests that some individuals deal with stress by engaging in health-risk behaviours, such as smoking, alcohol use, drug use or overeating (Jackson & Knight, 2006).

Results of the 2 X 5 ANOVA {2 Gender (Male and Female) x 5 levels of tobacco dependency (high dependent smoker X high dependent smokeless tobacco user X low dependent smoker X low dependent smokeless tobacco user X non-users)} and post hoc mean comparisons on Anxiety test measures revealed that there is a significant effect of Gender and levels of tobacco dependency. The mean score also showed that Females (high dependent smoker) scores higher than Males in

Becks Anxiety Inventory. The effect of gender on anxiety is 49% and the effect of level of tobacco dependency on anxiety is 94% showing high effects.

Results of the 2x5 ANOVA {2 Gender (Male and Female) x 5 levels of tobacco dependency (high dependent smoker X high dependent smokeless tobacco user X low dependent smoker X low dependent smokeless tobacco user X non-users)} and post hoc mean comparisonon Depression test measures revealed that there is a significant effect of Gender and levels of tobacco dependency. Female high dependent smokers showed highest mean score as compared to others in depression scale. The mean score also showed that Females (high dependent smoker) scores higher than Males in Becks Depression Inventory-II except. The effects of level and types on depression are 88% which indicates that level of tobacco dependency have high effects on depression.

Current smokers also are more likely to experience depression and anxiety, according to "Alcohol Use, Depression and Health Among Wisconsin Smokers," one of a series of reports based on the 2003 Wisconsin Tobacco Survey of more than 8000 Wisconsin adults. Current female smokers were twice as likely to report depression as male smokers and 2 ½ times as likely as female never smokers. Anxiety among current female smokers showed a similar pattern (Center for Tobacco Research and Intervention and UW Comprehensive Cancer Center, 2003).

Results of the 2x5 ANOVA {2 Gender (Male and Female) x 5 levels of tobacco dependency (high dependent smoker X high dependent smokeless tobacco user X low dependent smoker X low dependent smokeless tobacco user X non-users)} and post hoc mean comparison on Perceived stress test measures revealed that there is a significant effect of Gender and levels of tobacco dependency. Female high dependent smokers showed highest mean score as compared to others. The mean score also showed that Females (high dependent smoker) scores higher than Males in Perceived stress scale. The effect of level on Perceived stress is 88% which indicates that level of tobacco dependency have high effect on perceived stress. The score comparison showed that female (high dependent smoker) exhibit higher mean scores than male (high dependent smoker and smokeless tobacco user, low dependent smoker and smokeless tobacco user and the non-users).

Results of the 2x5 ANOVA {2 Gender (Male and Female) x 5 levels of tobacco dependency (high dependent smoker X high dependent smokeless tobacco user X low dependent smoker X low dependent smokeless tobacco user X non-users)} and post hoc mean comparisionon Personality measures revealed that there is a significant effect of Gender and levels of tobacco dependency. Female high dependent smokers showed highest mean score as compared to others except in Task oriented coping. The mean score also showed that Females (high dependent smoker) scores higher than Males in Eysenck Personality Questionnaire - Revised except for the Task oriented coping where male (non-user) score the highest mean. The score comparison showed that female (high dependent smoker) exhibit higher mean scores as compared to male (high dependent smoker and smokeless tobacco user, low dependent smoker and smokeless tobacco user and the non-users) in Psychoticism, Neuroticism and Extraversion.

Results of the 2x5 ANOVA {2 Gender (Male and Female) x 5 levels of tobacco dependency (high dependent smoker X high dependent smokeless tobacco user X low dependent smoker X low dependent smokeless tobacco user X non-users)}and post hoc mean comparisonon Coping styles measures revealed that there is a significant effect of Gender and levels of tobacco dependency. Female high dependent smokers showed highest mean score as compared to others except in Task oriented coping. The mean score also showed that Females (high dependent smoker) scores higher than Males in Coping inventory for stressful situation except for the Task oriented coping where male (non-user) score the highest mean. The score comparison showed that female (high dependent smoker) exhibit higher mean scores than male (high dependent smoker and smokeless tobacco user, low dependent smoker and smokeless tobacco user and the non-users) in emotional oriented coping and avoidant oriented coping and exhibit lowest mean score on task oriented coping.

The present study also showed that subjects who score high on the anxiety scale also score high on depression, as it can be seen that female high dependent smokers are high on anxiety measures as well as depression. One study revealed that, 85 percent of those with major depression were also diagnosed with generalised anxiety disorder while 35 percent had symptoms of panic disorder.

The Multiple regression analyses in the prediction of the symptoms of anxiety, depression, perceived stress, coping variables from the behavioural measures of personality (psychoticism, extraversion and neuroticism) and perceived stress was employed to determine the antecedents and consequences relationship among the behavioural measures of the theoretical construct as envisioned. Personality (psychoticism, extraversion and neuroticism) test as predictors and Becks Anxiety Inventory as a criterion in the regression model was computed.

The regression model with personality (psychoticism, extraversion and neuroticism) as predictors and Anxiety as the criterion emerged to be statistically significant. The result supported by the normality and homogeneity slope revealed that on scores of Anxiety with psychoticism as predictor explain 41% of variances, extraversion as 28% and neuroticism as 1.8%.

Personality - psychoticism as predictor for Depression explain 40% of variances, extraversion explain 22% and neuroticism explain 13%. The regression model with personality (psychoticism, extraversion and neuroticism) as predictors and perceived stress as the criterion emerged to be statistically significant. The results revealed that on the scale of Perceived stress, psychoticism as a predictor explained 37%, extraversion explained 25% and neuroticism explained 17%.

Personality (psychoticism, extraversion and neuroticism) as predictor and task oriented coping, emotional oriented coping and avoidance oriented coping as criterion indicates that psychoticism, extraversion and neuroticism on task oriented coping explains 17%, 29% and 20% respectively. Personality (psychoticism, extraversion and neuroticism) as predictor and emotional oriented coping as criterion indicates that psychoticism, extraversion and neuroticism on emotion oriented coping explains 36%, 22% and 17% respectively. Moreover, Personality (psychoticism, extraversion and neuroticism) as predictor and avoidance oriented coping as criterion indicates that psychoticism, extraversion and neuroticism on avoidance oriented coping explains 19%, 32% and 25% respectively.

The regression model with Perceived stress as predictor and anxiety and depression as a criterion and the results emerged to be statistically significant. The results revealed that on the scale of anxiety, perceived stress as a predictor

explain 76%and on the scale of depression, perceived stress as a predictor explain77%.

The result findings of this study are summarized in the following in relation to the theoretical expectation (hypotheses) set forth for the study:

1) Female exhibited greater scores than Male on various psychological variables (anxiety, depression, stress, coping (task oriented, emotional oriented and avoidance oriented) and personality (psychoticism, extraversion and neuroticism).

2) Female exhibited greater scores on Personality (extraversion and neuroticism) as compared to Males, scores are highest among female high dependent smokers followed by high dependent smokeless tobacco users, low dependent smokers and smokeless tobacco users and lowest scores are exhibited by non-users.

3) Female exhibited greater mean scores on Perceived stress measures as compared with Males; scores are highest among female high dependent smokers followed by high dependent smokeless tobacco users, low dependent smokers and smokeless tobacco users and lowest scores are exhibited by non-users.

4) Female exhibited greater scores on Anxiety and Depression as compared to Males, scores are highest among female high dependent smokers followed by high dependent smokeless tobacco users, low dependent smokers and smokeless tobacco users and lowest scores are exhibited by non-users

5) There are significant interactions between gender (male and female) and level of tobacco dependency on the psychological variables (personality, stress, coping, anxiety and depression).

The results clearly explained the cultural specific problems of the selected population – the Mizo, regarding tobacco dependency and its relation with psychological variables like anxiety, depression, stress, coping and personality. On the whole the findings of the study provided the component empirical bases that are sufficient enough in conformity to the theoretical expectations as set forth for the conduction of the study.

Limitations: Although, it was designed to be the systematic and authentic research, the present study is not free from limitations. Possible limitation of the study is that since self-report questionnaire were used, participant's social desirability could have influenced their reporting. Another possible limitation of the study is that the study of the present population are hardly or has not been investigated and no readymade theory that encompassed the widesphere of tobacco and its relationship with psychological variables has been neglected in the Mizo population. Moreover, the present study was conducted on adults aged between 40-50 yrs, which raise a number of methodological issues concerning the external validity of the findings for all age categories and all socio- economic status level.

Suggestions for further research: It would be worthwhile to test the present finding generalizing to different group of the same population and other population. Further extended studies by incorporating larger sample size and more repetitive measures of the psychological variables are desirable to be replicated in support of the findings and for formulation and implementation of the behaviour intervention programmes in the cultural group – the Mizo adults.

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APPENDICES

Appendix- I

DEMOGRAPHIC PROFILES
(ENGLISH)

1. S.I. No.: _____
2. Name: _____ Age: _____
3. Gender: 1. Male 2. Female
4. Area of Residence: 1. Rural 2. Urban 3. Others_____
5. Address: _____Ph. No._____
6. Education : 1. Illiterate 2. Can read only 3.Primary
   4. Middle 5. High/Higher 6.College 7.PG 8. Others

7. Marital Status: 1.Unmarried 2.Married 3.Widowed 4.Separated or Divorced 5.Not Applicable
8. Occupation: 1. Business/Professional and Semiprofessional 2. Semi Skilled & Unskilled worker 3.Students
   4.Others/Not classified. _____
9. Income (per month): Rs._____
10. Do you use tobacco? 1. Aw 2. Aih
11. If yes, what types of tobacco do you use? 1. Smoked form 2. Smokeless
    3. Both
12. Are you presently using tobacco? 1. Yes 2. No
13. If yes, how long have you been using tobacco? _____Years/ Months
14. If you have quit, how long have you quit? _____Years/ Months
15. Expens en tobacco per month _____
16. Details of Tobacco use:

Type	Age of onset	Average No. of cigs/bidis/sachets used per day	No. of years of regular tobacco use	Years of regular tobacco use)
Smoking 1. 2.				
Smokeless 1. 2.				

17. Any illness? _____
18. If yes, any treatment?_____
19. How long have you been ill? _____
20. Family size _____
21. Siblings _____

Appendix- II

DEMOGRAPHIC PROFILES
(MIZO)

1. S.I. No.: _____
2. Kum: _____
3. Gendar: 1. Mipa 2. Hmeichhia
4. Chenna: 1. Zokhua 2. Khawpui 3. A dang_____
5. Veng:_____Ph. No_____
6. Zir san zawng :1. Ziak leh chhiar thiam lo 2. Chhiar thei, ziak theilo
   3. Primary 4. Middle 5.High/Higher Sec.
   6.College 7.PG 8. A dang_____
7. Nupui/Pasal: 1. La neilo 2. Nei mek 3.Nupui/Pasal sun tawh 4. Inthen

8. Eizawnna: 1. Sawrkar hnathawk 2. Sumdawng 3.Nitin Inhlawhfa
   4. Lo nei 5. Zirlai 6. A dang_____
9. Sum lak luh zat (thla tin): Rs. _____
10. Zuk leh hmuam vaihlo atanga siam I hmang ngai em? 1. Aw 2. Aih
11. I hmang anih chuan eng ang chi nge? 1. Zuk chi (Cigarette etc.)
    2. Hmuam chi (sahdah, tuibur etc.)
    3. A chihnihin
12. Tunah ila hmang em? 1. Hmang mek 2. Hmang tawh lo
13. Ila hmang anih chuan engtia rei nge I hman tawh? Thla/Kum_____
14. I hmang tawhlo anih chuan engtia rei nge I nghei tawh? Thla/Kum_____
15. Thla tin vaihloa in senso zat Rs. _____

Vaihlo eng chi	Hman tan kum	Nikhata vaihlo (Meizial/bidi/vaihlo hmuam chi/ei chi) hman zat tlangpui	Vaihlo hman tawh hun (kum) chhung
Vaihlo zuk chi 1. 2.			
Vaihlo hmuam / ei chi 1. 2.			

17. Natna I nei em? I neih chuan eng natna nge? _____
18. Enkawlna I dawng em?_____
19. He natna hi eng anga rei nge I vei tawh? _____

Appendix- III

Beck Anxiety Inventory
(BAI; Beck, A. T. & Steer, R. A., 1990)
(ENGLISH)

Below is a list of common symptoms of anxiety. Please carefully read each item in the list. Indicate how much you have been bothered by that symptom during the past month, including today, by circling the number in the corresponding space in the column next to each symptom.

	Not At All	Mildly but it didn't bother me much.	Moderately - it wasn't pleasant at times	Severely – it bothered me a lot
1. Numbness or tingling	0	1	2	3
2. Feeling hot	0	1	2	3
3. Wobbliness in legs	0	1	2	3
4. Unable to relax	0	1	2	3
5. Fear of worst happening	0	1	2	3
6. Dizzy or lightheaded	0	1	2	3
7. Heart pounding/racing	0	1	2	3
8. Unsteady	0	1	2	3
9. Terrified or afraid	0	1	2	3
10. Nervous	0	1	2	3
11. Feeling of choking	0	1	2	3
12. Hands trembling	0	1	2	3
13. Shaky / unsteady	0	1	2	3
14. Fear of losing control	0	1	2	3
15. Difficulty in breathing	0	1	2	3
16. Fear of dying	0	1	2	3
17. Scared	0	1	2	3
18. Indigestion	0	1	2	3
19. Faint / lightheaded	0	1	2	3
20. Face flushed	0	1	2	3
21. Hot/cold sweats	0	1	2	3

Appendix- IV

Beck Anxiety Inventory
(BAI; Beck, A. T. & Steer, R. A., 1990)
(MIZO)

A hnuaiah hian hlauhthawnna leh manganna taksaa a lo lan chhuah dan hrang hrang tarlan ani a. Ngun takin tlar tin hi chhiar la. Tun thla kalta ah khan engtianga nasa in nge heng harsatna hian a tihbuai che, vawiin ni tiamin, tarlang turin, tlar tina chhanna zawna number ah hian i duhber pakhat i thai bial dawn nia.

	Nei ngai miah lo	Achangin, mahse min tibuai lutuk lo	Nei zeuh zeuh-nawm loh deuh chan a awm	Nei nasa-min tibuai thin hle
1. Kut/ke chawmawlh /mu chuai chuai /hit mem mem/za iai iai	0	1	2	3
2.Lum pup pup	0	1	2	3
3. Ke sai/ khur der der	0	1	2	3
4.Hahdam taka awm theiloh	0	1	2	3
5.Thil chhe ber thleng tura hlauhna/hriatna	0	1	2	3
6.Luhai	0	1	2	3
7. Thinphu rang zawih zawih	0	1	2	3
8. Nghet lo	0	1	2	3
9. Hlauthawng/hlau	0	1	2	3
10. Zamna	0	1	2	3
11. Thawchham dawna inhriatna	0	1	2	3
12. Kut khur der der	0	1	2	3
13. Tha khur der der /nghet lo	0	1	2	3
14. Mahni inthunun thei dawn loa inhriatna	0	1	2	3
15. Thawk harsat/ thawchham	0	1	2	3
16. Thih hlau	0	1	2	3
17. Thil hlauh nei	0	1	2	3
18. Pum nuamlo/ kawpuar	0	1	2	3
19.Thidang/nikhaw hre lova awm/luhai	0	1	2	3
20 Hmai hmel sen tawn tawn	0	1	2	3
21 Thlan tuiin a bual/thlan huh dup	0	1	2	3

Appendix- V

Beck Depression Inventory–II

(BDI-II; Beck, A. T., Steer, R. A., Brown, G.K., 1996)

(ENGLISH)

Name:_____ Marital status: _____ Age: _____
Sex_____Occupation: _____ Education: _____

Instructions: This questionnaire consists of 21 groups of statements. Please read each group of statements carefully, and then pick out the one statement in each group that best describes the way you have been feeling during the past two weeks, including today. Circle the number beside the statement you have picked. If several statements in the group seem to apply equally well, circle the highest number of that group. Be sure that you do not choose morethan one statement for any group, including Item 16 (Changes in Sleeping Pattern or Item 18 (Changes in Appetite).

1. **Sadness**

   0. I do not feel sad.
   1. I feel sad much of the time.
   2. I am sad all the time.
   3. I am so sad or unhappy that I can't stand it.

2. **Pessimism**

   0. I am not discouraged about my future.
   1. I feel more discouraged about my future than I used to be.
   2. I do not expect things to work out for me.
   3. I feel my future is hopeless and will only get worse.

3. **Past Failure**

   0. I do not feel like a failure.
   1. I have failed more than I should have.
   2. As I look back, I see a lot of failures.
   3. I feel I am a total failure as a person.

4. **Lack of Pleasure**
   0. I get as much pleasure as I ever did from the things I enjoy.
   1. I don't enjoy things as much as I used to.
   2. I get very little pleasure from the things I used to enjoy.
   3. I can't get any pleasure from the things I used to enjoy.

5. **Guilty Feelings**
   0. I don't feel particularly guilty.
   1. I feel guilty over many things I have done or should have done.
   2. I feel quite guilty most of the time.
   3. I feel guilty all of the time.

6. **Punishment Feelings**
   0. I don't feel I am being punished.
   1. I feel I may be punished.
   2. I expect to be punished.
   3. I feel I am being punished.

7. **Self-Dislike**
   0. I feel the same about myself as ever.
   1. I have lost confidence in myself.
   2. I am disappointed in myself.
   3. I dislike myself.

8. **Self-Criticalness**
   0. I don't criticize or blame myself more than usual.
   1. I am more critical of myself than I used to be.
   2. I criticize myself for all of my faults
   3. I blame myself for everything bad that happens.

9. **Suicidal thoughts or Wishes**
   0. I don't have any thoughts of killing myself.
   1. I have thoughts of killing myself, but I would not carry them out.
   2. I would like to kill mself.
   3. I would kill myself if I had the chance.

10. **Crying**
    0. I don't cry anymore than I used to.
    1. I cry more than I used to.
    2. I cry over every little thing.
    3. I feel like crying, but I can't.

11. **Agitation**
    0. I am no more restless or wound up than usual.
    1. I feel more restless or wound up than usual.
    2. I am so restless or agitated that it's hard to stay still.
    3. I am so restless or agitated that I have to keep moving or doing something.

12. **Lost of Interest**
    0. I have not lost interest in other people or activities.
    1. I am less interested in other people or things than before
    2. I have lost most of my interest in other people or things.
    3. Its hard to get interested in anything.

13. **Indecisiveness**
    0. I make decisions about as well as ever
    1. I find it more difficult to make decisions than usual.
    2. I have much greater difficulty in making decisions than I used to.
    3. I have trouble making my decisions.

14. **Worthlessness**
    0. I do not feel I am worthless.
    1. I don't consider myself as worthwhile and useful as I used to.
    2. I feel more worthless as compared to other people.
    3. I feel utterly worthless.

15. **Lost of Energy**
    0. I have as much energy as ever.
    1. I have less energy than I used to have.
    2. I don't have enough energy to do very much.
    3. I don't have enough energy to do anything.

16. **Changes in Sleeping Pattern**

0. I have not experienced any change in my sleeping pattern.
1a. I sleep somewhat more than usual.
1b. I sleep somewhat less than usual.
2a. I sleep a lot more than usual.
2b. I sleep a lot less than usual.
3a. I sleep most of the day.
3b. I wake up 1-2 hours early and can't get back to sleep.

17. **Irritability**

0. I am no more irritable than usual.
1. I am more irritable than usual.
2. I am much more irritable than usual.
3. I am irritable all the time.

18. **Changes in Appetite**

0. I have not experienced any changes in my appetite.
1(a). My appetite is somewhat less than usual.
1(b). My appetite is somewhat greater than usual.
2(a). My appetite is much less than before. .
2(b). My appetite is much greater than usual. .
3(a). I have no appetite at all.
3(b). I crave food all the time.

19. **Concentration Difficulty**

0. I can concentrate as well as ever.
1. I can't concentrate as well as usual.
2. It's hard to keep my mind on anything for very long.
3. I find I can't concentrate on anything.

20. **Tiredness or Fatigue**

0. I am no more tired or fatique than usual.
1. I get more tired or fatiqued more easily than usual.
2. I am too tired or fatiqued to do a lot of the things I used to do.
3. I am too tired or fatiqued to do most of the things I used to do.

21. **Lost of Interest in Sex**

0. I have not noticed any recent change in my interest in sex.
1. I am less interested in sex than I used to be.
2. I am much less interested in sex now.
3. I have lost interest in sex completely.

Appendix- VI

Beck Depression Inventory–II

(BDI-II; Beck, A. T., Steer, R. A., Brown, G.K., 1996)

(MIZO)

He questionnaire hian zawhna 21 a nei a. Ngun takin chhiar la, i awm dan /rilru put hmang ni a i hriat pakhat \heuh hlawm khatah hian thlan chhuah tur a ni a, i thlan chhuah chu bawmah hian thai ang che. Then hrang pakhatah chhanna pakhat aia tam i nei a nih pawhin dik tam bera i hriat pakhatah chauh thai tur a ni. Item 16 &18 telin \hen hrang tinah pakhat aia tam thlan theih a ni lo tihna a nih chu.

1. **Sadness (Lungngaihna / Nguina / Hlim lohna)**
   0. Ka lungngai lo.
   1. Ka hun tam zawkah ka lungngai.
   2. Engtik lai pawhin ka lungngai
   3. Tawrh ngaihna awm lo khawpin ka lungngai.

2. **Pessimism (Thil a thim zawnga thlirna)**
   0. Ka hun lo la kal tur hian min ti hnual lo
   1. Ka hma lam hun ka ngaihtuah hian ka hnual
   2. Ka tan hian thil \ha a thleng thei tawh pawhin ka ring lo.
   3. Ka hma lam hunah hian beisei ka nei lova, beisei a bo telh telh zawkin ka hria.

3. **Past Failure (Hun kal tawha hlawhchhamna)**
   0. Mi hlawhchhamah ka in ngai lo.
   1. Ka in rin aiin ka hlawhchham zing
   2. Ka hun kal tawh ka thlir letin, hlawhchhamna tam tak ka hmu
   3. Mi hlawhchham tawp ka niin ka inhria.

4. **Lack of Pleasure (Nuam tihna awmlo/hlimna nei lo)**
   0. Nuam ka tih \hin kha nuam ka la ti reng
   1. Nuam ka tih \hin ang kha nuam ka ti em em tawh lo
   2. Nuam ka tih \hin ang kha nuam ka ti tawh mang lo.
   3. Nuam ka tih \hin kha nuam tihna ka nei tawh lo.

5. **Guilty Feelings (Mahni inthiam lohna rilru pu)**
   0. Mahni inthiamlohna ka nei hran lo.
   1. Ka thil tih tawhah leh tih awm tak ka tih lohah ka in thiam lo
   2. Inthiam lohna ka nei deuh reng.
   3. Inthiam lohna in ka khat.

6. **Punishment Feelings (Hrem nihna rilru pu)**
   0. Hrem niin ka inhre lo.
   1. Hrem tur niin ka inhria
   2. Hrem ka nih ka inring

3. Hrem niin ka inhria

7. **Self-Dislike (Mahni inhuatna / Induh lohna)**
   0. Keimah ka in ngaih dan a pangngai reng
   1. Mahni inrintawkna ka hlauh
   2. Keimahah hian ka lungawi lo.
   3. Keimah hi ka inhua

8. **Self-Criticalness (mahni insawiselna)**
   0. Aâwm tawk bakin ka indem hran lo.
   1. Tun hma aiin indemna ka nei nasa zâwk
   2. Ka thil tih dik loh zawng zawngah ka indem
   3. Thil tha lo thleng apiangah ka in mawh puh.

9. **Suicidal thoughts or Wishes (Mahni inthah chakna/ngaihtuahna)**
   0. Mahni intihhlum duhna rilru ka pu ngai lo.
   1. Mahni intihhlum duhna rilru ka nei \hin a, mahse ka hlenchhuak lovang
   2. Mahni intihhlum ka duh
   3. Hun remchang nei ta ila ka intihlum ang.

10. **Crying (tahna)**
   0. A hma aiin ka \ap belh chuang lo
   1. A hma aiin ka \ap belh ta zawk
   2. Thil hoteah pawh ka \ap \hin
   3. lah chu ka duh a, mahse ka thei lo.

11. **Agitation (Phawklek/Chi-ai/Phili)**
   0. Nidang aiin ka phili chuang lo
   1. Ni dang aiin ka phili awlsam ta.
   2. Awm hle hle harsa ti khawpin ka phili ruai \hin
   3. Chet reng ngai khawpin ka phawklekin ka chiai.

12. **Lost of Interest (Tuina hloh)**
   0. Ka thil tihah ka tui dan a pangngai reng
   1. A hma aiin ka thil tihah ka tui ta lo deuh
   2. Ka thil tihah tuina ka nei ta mang lo.
   3. Eng thilah pawh tui harsa ka ti.

13. **Indecisiveness (Thutlukna siam harsatna /Theih lohna)**
   0. Thuthlukna ka siam awlsam dan a la pangngai reng.
   1. A hma aiin thutlukna siam harsa ka ti
   2. A hma aiin thutlukna siam ka harsat fe zawk.
   3. Thutlukna ka siam hlei thei tawh lo.

14. **Worthlessness (Hlutna /Tlaktlai lova inngaihna)**
   0. Hlutna nei lo tawpah chuan ka in ngai lo
   1. A hma aiin hlu lo leh \angkai ta lo riauin ka inhria

2. Mi dang aiin hlu lo bikin ka inhria
3. Tlaktlai lo t^wpah ka in ngai

15. **Lost of Energy (thathona hloh)**
0. Ka thatho dan a la pangngai reng
1. A hma aiin chakna ka nei tlem
2. Thil tam tak ti turin chakna ka nei lo
3. Engti tur mahin thathona ka nei lo

16. **Changes in Sleeping Pattern (Mut tui lai inthlak)**
0. Ka mut hun pangngaiah danglamna a awm lo
1a. Ka mut thin aia tam ka mu
1b. Ka mut thin aia tlem ka mu
2a. Ka mut thin aia tam daih ka mu
2b. Ka mut thin aia tlem daih ka mu
3a. Ni leng deuh thawin ka mu
3b. Ka thawh hun aia darkar 1-2 a hma in ka harh a, ka mu leh thei tawh \hin lo.

17. **Irritability (Thinchhia/Lungawi lo hma)**
0. Ni dang aiin ka thin che chuang lo.
1. Ni dang aiin ka thinrim hma deuh
2. Ni dang ai daihin ka thinrim hma
3. Englai pawhin ka thin a rim

18. **Changes in Appetite (Chawei tuina danglamna)**
0. Ka chawei tui dan a pangngai reng
1(a). A hma aiin ka chawei a tui sawt
1(b). A hma aiin ka chawei a tui sawt
2(a). A hma aiin ka chawei a tui lo fe zawk.
2(b). A hma aiin ka chawei a tui fe zawk.
3(a). Thil ei chakna ka nei lo tawp
3(b). Thil ei ka chak reng.

19. **Concentration Difficulty (Rilru pek harsatna)**
0. Ka concentrate theih dan a la pangngai reng
1. Ni dang angin ka concentrate tha thei lo.
2. Engah mah rei tak ka concentrate thei lo.
3. Engah mah ka in concentrate thei lo.

20. **Tiredness or Fatigue (Chauhna / Hahna)**
0. Nidang aiin ka chau chuang lo
1. Ni dang aiin ka hah / chau hma
2. Thil tam tak ka tih \hinte ti turin ka chau lutuk
3. Ka thil tih reng \hin te ti turin ka chau ta lutuk.

21. **Lost of Interest in Sex (Sex lam ngaihvenna)**
    0. Sex lam ka ngaihven dan a la pangngai reng
    1. A hma aiin sex lam ka ngaihvenna a tla hniam
    2. Tunah phei chuan sex lam ka ngaihtuahna a thlahniam ta hle.
    3. Sex lam reng reng ka ngaihven peih ta lo.

Appendix- VII

Percieved Stress Scale
(PSS; Cohen, S., & Williamson, G., 1988)
(ENGLISH)

The questions in this scale ask you about your feelings and thoughts during THE LAST MONTH. In each case, please indicate your response by placing an "X" over the circle representing HOW OFTEN you felt or thought a certain way.

		Never	Almost Never	Sometimes	Fairly Often	Very Often
1.	In the last month, how often have you been upset because of something that happened unexpectedly?	0	1	2	3	4
2.	In the last month, how often have you felt that you were unable to control the important things in your life?	0	1	2	3	4
3.	In the last month, how often have you felt nervous and "stressed"?	0	1	2	3	4
4.	In the last month, how often have you felt confident about your ability to handle your personal problems?	0	1	2	3	4
5.	In the last month, how often have you felt that things were going your way?	0	1	2	3	4
6.	In the last month, how often have you found that you could not cope with all the things that you had to do?	0	1	2	3	4
7.	In the last month, how often have you been able to control irritations in your life?	0	1	2	3	4
8.	In the last month, how often have you felt that you were on top of things?	0	1	2	3	4
9.	In the last month, how often have you been angered because of things that were outside your control?	0	1	2	3	4
10.	In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?	0	1	2	3	4

Appendix- VIII

Percieved Stress Scale
(PSS; Cohen, S., & Williamson, G., 1988)
(MIZO)

Heng zawhna te hian THLA KAL TAA i rilru put dan leh ngaihtuahna a zawt che a. Zawhna tinah hian, i chhanna tarlang turin i duh ber zawn ah hian thai ang che.

		Ngai	Ngailo tluk	Achang in	Ti ve fo	Vawi tam tak
1.	Thla liam ta khan i beisei loh dana thil a thlen avangin vawi engzat nge i mangan?	0	1	2	3	4
2.	Thla kal ta khan vawi engzat nge i nuna thil pawimawh te kengkawh zo lova i inhriat?	0	1	2	3	4
3.	Thla liam ta khan vawi engzat nge i zam a, i rilru a rim tawngkhawng?	0	1	2	3	4
4.	Thla liam ta khan vawi engzat nge i nitin harsatna leh lawm lohnate i tuar chhuah avanga ngaihtha taka i awm?	0	1	2	3	4
5.	Thla liam ta khan eng anga zingin nge i duhdana thil kala i hriat?	0	1	2	3	4
6.	Thla liam ta khan eng anga zingin nge i thiltih tur zawng zawngte su tlang/tawn tlang zo lova i inhriat?	0	1	2	3	4
7.	Thla liam ta khan eng anga zingin nge i nuna i hrehawmna/lungawi lohna thunun theia i inhriat?	0	1	2	3	4
8.	Thla liam ta khan eng anga zingin nge in hmakhua tha thawkhata i inhriat?	0	1	2	3	4
9.	Thla liam ta khan thil i tihdanglam theih ni si lovin eng anga zingin nge a tih thinur che?	0	1	2	3	4
10.	Thla liam ta khan eng anga zingin nge i nuna harsatnate nasa lutuk, tuar chhuah/hneh theih rual lohva i hriat?	0	1	2	3	4

Appendix- IX

COPING INVENTORY FOR STRESSFUL SITUATION (ADULT)
(CISS-Adult; Endler and Parker, 1999)
(ENGLISH)

The following are ways people react to various difficult, stressful, or upsetting situations. Please circle a number from 1 to 5 for each item. Indicate how much you engage in these types of activities when you encounter a difficult, stressful or upsetting situation.

Like:

Very much	=	5
Mostly	=	4
Moderately	=	3
A little	=	2
Not at all	=	1

1	Schedule my time better	5	4	3	2	1
2	Focus on the problem and see how I can solve it.	5	4	3	2	1
3	Think about the good times.	5	4	3	2	1
4	Try to be with other people.	5	4	3	2	1
5	Blame myself for procrastinating.	5	4	3	2	1
6	Do what I think is best.	5	4	3	2	1
7	Become preoccupied with aches and pains.	5	4	3	2	1
8	Blame myself for having gotten into this situation.	5	4	3	2	1
9	Window shop.	5	4	3	2	1
10	Outline my priorities.	5	4	3	2	1
11	Try to go to sleep.	5	4	3	2	1
12	Treat myself to a favorite food or snack.	5	4	3	2	1
13	Feel anxious about not being able to cope.	5	4	3	2	1
14	Become very tense.	5	4	3	2	1

15	Think about how I solve similar problems.	5	4	3	2	1
16	Tell myself that it is really not happening to me.	5	4	3	2	1
17	Blame myself for being too emotional about the situation	5	4	3	2	1
18	Go out for a snack or meal.	5	4	3	2	1
19	Become very upset.	5	4	3	2	1
20	Buy myself something.	5	4	3	2	1
21	Determine a course of action and follow it.	5	4	3	2	1
22	Blame myself for not knowing what to do.	5	4	3	2	1
23	Go to party.	5	4	3	2	1
24	Work to understand the situation	5	4	3	2	1
25	“Freeze” and not know what to do.	5	4	3	2	1
26	Take corrective action immediately.	5	4	3	2	1
27	Think about the event and learn from my mistakes.	5	4	3	2	1
28	Wish that I could change what had happened or how I felt.	5	4	3	2	1
29	Visit a friend.	5	4	3	2	1
30	Worry about what I am going to do.	5	4	3	2	1
31	Spend time with a special person.	5	4	3	2	1
32	Go for a walk.	5	4	3	2	1
33	Tell myself that it will never happen again.	5	4	3	2	1
34	Focus on my general inadequacies.	5	4	3	2	1
35	Talk to someone whose advice I value.	5	4	3	2	1
36	Analyze the problem before reacting.	5	4	3	2	1
37	Phone a friend.	5	4	3	2	1

38	Get angry.	5	4	3	2	1
39	Adjust my priority.	5	4	3	2	1
40	See a movie.	5	4	3	2	1
41	Get control of the situation.	5	4	3	2	1
42	Make an extra effort to get things done.	5	4	3	2	1
43	Come up with several different solutions to the problem.	5	4	3	2	1
44	Take some time off and get away from the situation.	5	4	3	2	1
45	Take it out on other people.	5	4	3	2	1
46	Use the situation to prove that I can do it.	5	4	3	2	1
47	Try to be organized so I can be on top of the situation.	5	4	3	2	1
48	Watch TV.	5	4	3	2	1

Appendix- X

COPING INVENTORY FOR STRESSFUL SITUATION (ADULT)
(CISS-Adult; Endler and Parker, 1999)
(MIZO)

Hun harsa leh manganthlak I tawh laia I awm thin dan emaw , lo tawng palh ta la, awm a I inrindan mil in a hnuai a zawhna te hi I chhang dawn nia.						
Hetiangin:	ti ziah = 5 ti fo = 4 tih zeuh zeuh = 3 ti ve tawh = 2 ti ngai lo = 1					
1	Ka hun uluk zawkin ka duang	5	4	3	2	1
2	Harsatna chu zirchiangin engtia tihtur nge tih ka hre thin	5	4	3	2	1
3	Hun hlimawm leh nuam ka tawn tawh te ka dawn kir thin	5	4	3	2	1
4	Midangte bulah ka awm tam phah thin	5	4	3	2	1
5	Keiman ka hun hlu khawral nasat vangah ngaiin ka in thiamlo thin	5	4	3	2	1
6	Thaber nia ka hriat ka ti thin	5	4	3	2	1
7	Taksa na leh khamte rilru a luah reng thin	5	4	3	2	1
8	Hetiang hun harsa hi keimah vanga ni	5	4	3	2	1
9	Thillei tak tak lovin dawr ah ka vak kual mai mai thin	5	4	3	2	1
10	Ka ngaih pawimawh te a in dawtin ka rem thin.	5	4	3	2	1
11	Mut bo san ka tum thin	5	4	3	2	1
12	Ka ngaihnat zawng eitur tuhnai ka ei thin	5	4	3	2	1
13	Tawrh harsa ka tih avangin ka rilru a hah thin	5	4	3	2	1
14	Ka rilru a phawklek thin	5	4	3	2	1

15	A anpui harsatna dang ka paltlang tawhdan te ka ngaihtuah let thin	5	4	3	2	1
16	A ni tak tak lo ang tiin keimah leh keimah ka inhrilh thin.	5	4	3	2	1
17	He tiang hunah rilru buai awl tak ka neih avangin ka in dem thin	5	4	3	2	1
18	Chaw leh thingpuite in tur in ka kal chhuak thin	5	4	3	2	1
19	Ka rilru a hahin a beidawng thin	5	4	3	2	1
20	Engemaw thil ka inlei sak thin	5	4	3	2	1
21	Tihtur ka in tuk a ka ti thin	5	4	3	2	1
22	Tihtur ka hriatloh a vangin ka indem hle thin.	5	4	3	2	1
23	Intihhlimna ah ka kal thin	5	4	3	2	1
24	Harsatna hriatchian tumin ka bei thin	5	4	3	2	1
25	A ngaihna hre loin ka khawng tawp thin	5	4	3	2	1
26	Siamthat hna ka thawk nghal vat thin	5	4	3	2	1
27	Thil thleng chu nguntaka ngaihtuah in ka tihdiklohna hmuh ka tum thin	5	4	3	2	1
28	Thil thleng kha tihdanglam emaw , ka tawrhnat dan chu thlakdanglam thei ila ni ila ka ti thin	5	4	3	2	1
29	Thian te ka tlawh thin	5	4	3	2	1
30	Engnge ka tih ang tih ka ngaihtuah hah hle thin	5	4	3	2	1
31	Min hrethiam tute kiangah hun ka hmang thin	5	4	3	2	1
32	Khawi khawi ah emaw kein ka kal thin	5	4	3	2	1
33	A thlengleh tawh lovang tihin ka inhnem thin	5	4	3	2	1
34	Ka tlintawklohna tllangpui te ka bih chiang thin	5	4	3	2	1
35	Thurawn tha nei a ka rin te ka ti ti pui thin	5	4	3	2	1
36	Hma lak hmain harsatna chu ka zirchiang hmasa thin	5	4	3	2	1

37	Thiante ka be kual thin	5	4	3	2	1
38	Ka thinur thin	5	4	3	2	1
39	lKa ngaihhlutte ka thlak thleng thin	5	4	3	2	1
40	Cinema film ka en thin	5	4	3	2	1
41	Ka thuhnuaiah thilthleng chu dah ka tum thin	5	4	3	2	1
42	Nasa leh zuala thawkhah in tihzawh ka tum thin.	5	4	3	2	1
43	Harsatna sut kiandan hrang hrang te ka ngaihtuah chhuak thin	5	4	3	2	1
44	Chawlh la in hmundangah ka kalbosan thin	5	4	3	2	1
45	Midangte vanga thleng ani ka ti thin	5	4	3	2	1
46	Mahni inrintawkna ka neih finfiahnan ka hmachhawn thin	5	4	3	2	1
47	Tha leh zuala ruahmanisiamin harsatna hneh theihloh a awm ka tum thin	5	4	3	2	1
48	TV ka ensan thin	5	4	3	2	1

Appendix- XI

EYSENCK PERSONALITY QUESTIONNAIRE-REVISED

(EPQ-R; Eysenck, H.J. & Eysenck, S.B.G., 1980)
(ENGLISH)

Instructions: Please answer each question by putting (X) mark in the box following 'Yes' or 'No'. There is no right or wrong answer, or no trick questions. Work quickly and do not think too long about the exact meaning of the question.

PLEASE REMEMBER TO ANSWER EACH QUESTION

1. Do you have many different hobbies? Yes □ No □
2. Do you stop to think over before doing anything? Yes □ No □
3. Does your mood go up and down? Yes □ No □
4. Have you ever taken the praise for something you knew someone else had really done? Yes □ No □
5. Are you a talkative person? Yes □ No □
6. Would being in debt worry you? Yes □ No □
7. Do you feel 'just miserable' for no reason? Yes □ No
   □Were you ever greedy by helping yourself to more than your share of anything? Yes □ No □
8. Do you lock up your house carefully at night? Yes □ No □
9. Are you rather lively? Yes □ No □
10. Would it upset you a lot to see a child or an animal suffer? Yes □ No □
11. Do you often worry about things you should not have done or said? Yes □ No □
12. If you say you will do something, you always keep your promise no matter howinconvenient it may be? Yes □ No □
13. Can you usually let yourself go and enjoy yourself at a lively party? Yes □ No □
14. Are you an irritable person? Yes □ No □
15. Have you ever blamed someone for doing something you knew was really your fault? Yes □ No □
16. Do you enjoy meeting new people? Yes □ No □
17. Do you believe insurance schemes are a good idea? Yes □ No □
18. Are your feelings easily hurt? Yes □ No □
19. Are all your habits good and desireable ones? Yes □ No □
20. Do you tend to keep in the background on social occasions? Yes □ No □
21. Would you take drugs which may have strange or dangerous effects? Yes □ No □
22. Do you often feel 'fed up'? Yes □ No □

P	E	N	L

23. Have you ever taken anything (even a pin or a button) that belonged to someone else? Yes □ No □
24. Do you like going out a lot? Yes □ No □
25. Do you enjoy hurting people you love? Yes □ No □
26. Are you often troubled about feelings og guilt? Yes □ No □
27. Do you sometimes talk about things you know nothing about? Yes □ No □
28. Do you prefer reading to meeting people? Yes □ No □
29. Do you have enemies who want to harm you? Yes □ No □
30. Would you call yourself a nervous person? Yes □ No □
31. Do you have many friends? Yes □ No □
32. Do you enjoy practical jokes that can sometimes really hurt people? Yes □ No □
33. Are you a worrier? Yes □ No □
34. As a child did you do as you were told immediately and without grumbling? Yes □ No □
35. Would you call yourself happy go lucky? Yes □ No □
36. Do good manners and cleanliness matter much to you? Yes □ No □
37. Do you worry about things that might happen? Yes □ No □
38. Have you ever broken or lost something belonging to someone else? Yes □ No □
39. Do you usually take the initiative in making new friends? Yes □ No □
40. Would you call yourself 'highly/strung'? Yes □ No □
41. Are you mostly quiet when you are with other people? Yes □ No □
42. Do you think marriage is old- fashioned and should be done away with? Yes □ No □
43. Do you sometimes boast a little? Yes □ No □
44. Can you easily get some life into a rather dull party? Yes □ No □
45. Do people who drive carefully annoy you? Yes □ No □
46. Do you worry about your health? Yes □ No □
47. Have you ever said anything bad or nasty about anyone? Yes □ No □
48. Do you like telling jokes and funny stories to your friends? Yes □ No □
49. Do most things taste the same to you? Yes □ No □
50. As a child were you ever cheeky to you parents? Yes □ No □
51. Do you like mixing with people? Yes □ No □
52. Does it worry you if you know there are mistakes in your work? Yes □ No □
53. Do you suffer from sleeplessness? Yes □ No □
54. Do you always wash before a meal? Yes □ No □
55. Do you nearly always have 'ready answer' when people talk to you? Yes □ No □
56. Do you like to arrive at appointments in plenty of time? Yes □ No □
57. Have you often felt listless and tired for no reason? Yes □ No □
58. Have you ever cheated at a game? Yes □ No □
59. Do you like doing things in which you have to act quickly? Yes □ No □
60. Is (or was) your mother a good woman? Yes □ No □
61. Do you often feel life is very dull? Yes □ No □
62. Have you ever taken advantage of someone? Yes □ No □
63. Do you often take on more activities than you have time for? Yes □ No □

64. Are there several people who keep trying to avoid you? Yes □ No □
65. Do you worry a lot about your looks? Yes □ No □
66. Do you think people spend too much time safeguarding their future with savings and insurance? Yes □ No □
67. Have you ever wished that youo were dead? Yes □ No □
68. Woulde you dodge taxes if you were sure you could never be found out? Yes □ No □
69. Can you get a party going? Yes □ No □
70. Do you try not to be rude to people? Yes □ No □
71. Do you worry too long afteran embarrassing exoerience? Yes □ No □
72. Have you ever insisted on having your own way? Yes □ No □
73. When you catch a train do you arrive at the last minute? Yes □ No □
74. Do you suffer from (nerves)? Yes □ No □
75. Do your friendships break up easily without it being your fault? Yes □ No □
76. Do you often feel lonely Yes □ No □
77. Do you always practice what you preach? Yes □ No □
78. Do you sometimes like teasing animals? Yes □ No □
79. Are you easily hurt when people find fault with you or the work you do? Yes □ No □
80. Have you ever been late for an appointment or work? Yes □ No □
81. Do you like plenty of bustle and excitement around you? Yes □ No □
82. Would you like other people to be afraid of you? Yes □ No □
83. Are you sometimes bubbling over with energy and sometimes very sluggish? Yes □ No □
84. Do you sometimes put off until tomorrow what you ought to do today? Yes □ No □
85. Do other people think of you as being real lively? Yes □ No □
86. Do people tell you a lot of lies? Yes □ No □
87. Are you touchy about something? Yes □ No □
88. Are you always willing to admit it when you have made a mistake? Yes □ No □
89. Would you feel very sorry for an animal caught in a trap? Yes □ No □

PLEASE CHECK THAT YOU HAVE ANSWERED ALL THE QUESTIONS

PAGE No.	P	E	N	L
1.				
2.				
3.				
4.				
TOTAL				

Appendix- XII

EYSENCK PERSONALITY QUESTIONNAIRE-REVISED

(EPQ-R; Eysenck, H.J. & Eysenck, S.B.G., 1980)

(MIZO)

Instructions: Khawngaihin zawhna tin hi (X) dahin "Aw" emaw "Aih" tiha thaiin chhang vek ang che.Chhanna dik leh diklo emaw, tum ruk nei zawhna a awmloa. A rang thei ang berin chhang la, zawhna awmzia ngaihtuah rei lutuk suh ang che.

1. Thil tih than chi hrang hrang I nei em? Aw □ Aih □
2. Thil I tih dawn apiangin ngun takin I ngaihtuah chiang phawt ngai em? Aw □ Aih □
3. I rilru awm dan a inthlak fo thin em? Aw □ Aih □
4. Midang tih tawh ni si, nangma tih anga miin an fak chein I pawm mai tawh ngai em? Aw □ Aih □
5. Mi tawng tam tak I ni em? Aw □ Aih □
6. Ba neih in I rilru a ti hah angem? Aw □ Aih □
7. Chhan awm lem loin rilru hrehawmin I awm tawp ngia em? Aw □ Aih □
8. I chan tur tawk aliam I duham avangin I hui tawh ngai em? Aw □ Aih □
9. Zanah I in tha takin I kalh ngai em? Aw □ Aih □
10. Mi thothang tha tak niin I inhria em? Aw □ Aih □
11. Naupang emaw rannung na tuar lai hmuhin a ti lungngai ce angem? Aw □ Aih □
12. I thil tih leh sawi loh tur I sawi nia I inhriat avangin I rilru a hah fo em? Aw □ Aih □
13. Eng ang pawhin remlom se, ka ti ang I tih tawh chuan I thuah I ding nghet tlat em? Aw □ Aih □
14. In tih hlimna hmunah te nuam tit akin I awm thei em? Aw □ Aih □
15. Thil ning riau thin mi I ni em? Aw □ Aih □
16. I thiamlohna ni reng si, midang tihah I mawhpuh tawh ngai em? Aw □ Aih □
17. Hmelhriat thar siam nuam I ti m? Aw □ Aih □
18. Insurance hi ngaihdan tha tak niin I hria em? Aw □ Aih □
19. I rilru a na hma em? Aw □ Aih □
20. I thil chin than te hi thil tha leh duhawm vek an ni em? Aw □ Aih □
21. Thil tih khawm nikhuaah I in kiltawih thin em? Aw □ Aih □
22. Hnathawh mak leh hlauhawm nei thei damdawi I ei duh angem? Aw □ Aih □
23. Thil reng reng ning deuhin I awm fo thin em? Aw □ Aih □
24. Eng thil pawh (hriau emaw kawrkilh emaw pawh) midang ta I la tawh ngai em? Aw □ Aih □
25. Pawn chhuah nuam I ti viau em? Aw □ Aih □
26. I hmangiahte tih nat nuam I tie m? Aw □ Aih □
27. Mahni inthiamlohnain a ti buai fo thin che em? Aw □ Aih □
28. I thil hrait miah loh chungchang I sawi ngai em? Aw □ Aih □

29. Mi nena inhmuh aiin lehkha chhiar I thlang zawk em? Aw □ Aih □
30. Hmelma nangmah tin a duhtu che I nei em? Aw □ Aih □
31. Mi zam ve thei tak niin I inhria em? Aw □ Aih □
32. Thian I nei ngah em? Aw □ Aih □
33. Fiamthhu tak midangte rilru tina thei thawh nuam I ti em? Aw □ Aih □
34. Rilru hah mi I ni em? Aw □ Aih □
35. Naupang I nih lain, thil ti tura an tih chein phun loin rang takin I ti thin em? Aw □ Aih □
36. Mi hlim leh vannei mi niah I inchhal angem? Aw □ Aih □
37. Nungchang tha leh thianghlimna hi I tan thil pawimawh tak ani em? Aw □ Aih □
38. Thil thalo lo thleng thei nia I hriat in a ti hlauthawng thin che em? Aw □ Aih □
39. Midang thil tihchhiat emaw tih bo sak I nei tawh em? Aw □ Aih □
40. Thian thar siam turin tan I la hmasa tlangpui em? Aw □ Aih □
41. Mi zam leh ni tung mi niin I inhria em? Aw □ Aih □
42. Midang bulah I tawng tamlo tlangpui em? Aw □ Aih □
43. Inneihna hi chin dan hlui leh tul loah I ngai em? Aw □ Aih □
44. Indahsan chang I nei em? Aw □ Aih □
45. Inhmuhkhawmnaah boruak awlsam takin I siam thei em? Aw □ Aih □
46. Motor fimkhur taka khalh mi te hi ninawm I ti thin em? Aw □ Aih □
47. I hriselna hi I lungkham em? Aw □ Aih □
48. Midang chungchang thalo leh ngeiawm takin I sawi tawh ngai em? Aw □ Aih □
49. I thiante fiamthu leh thawnthu nuihzatthlak hrilh nuam I tie m? Aw □ Aih □
50. Thil tui dan I kaah a inang tlangpui em? Aw □ Aih □
51. Naupang I nih lain I nu leh pa I tlawn ngai em? Aw □ Aih □
52. Thian kawm nuam I ti em? Aw □ Aih □
53. I hnathawhah tihsual a awm tih I hriatin I rilru a hah thin em? Aw □ Aih□
54. Muttheihloh harsatna I tawk em? Aw □ Aih □
55. Thil ei hmain I kut I sil ziah em? Aw □ Aih □
56. Miin an biak chein chhanna I lo nei lawk fo thin em? Aw □ Aih □
57. Inhmuhna tur pawimawh I neihin hma takah I kal thin em? Aw □ Aih □
58. Chhan hranpa awm loin phawklek leh chau riauin I inhre fo thin em? Aw □ Aih □
59. Infiamnaah I entawn tawh ngai em? Aw □ Aih □
60. Chet vat ngaihna thil tih nuam I ti em? Aw □ Aih □
61. I nu hi/khan nu fel tak ani em? Aw □ Aih □
62. Nun hi ho I ti fo em? Aw □ Aih □
63. Midangte remchangah I hmang tawh ngai em? Aw □ Aih □
64. Hun I neih aia tam tih tur tih I tum fo thin em? Aw □ Aih □
65. Hmuhloh hram tum tu che an awm nual em? Aw □ Aih □
66. I landan I lungkham viau em? Aw □ Aih □
67. Mi tamtak hian an hun lo kal tur venhim nan pawisa khawl leh vawn an buaipuilutukin I hria em? Aw □ Aih □
68. Thih daih I duh thin em? Aw □ Aih □

69. Manchhuak dawn miahlo ce se chhiah hi I pelo mai duh angem? Aw □ Aih □
70. Intihhlimna hmunah boruak I siam thei em? Aw □ Aih □
71. Midang tana ngeiawm lo nih I tum em? Aw □ Aih □
72. Thil zahthlak tak I tawn hnuin hun rei tak I vei zui thin em? Aw □ Aih □
73. I thua kal tlang tum tlat chan I nei tawh em? Aw □ Aih □
74. Rel a I kalin I tlai lo chauh zel em? Aw □ Aih □
75. Zam buai mai thin harsatna I nei em? Aw □ Aih □
76. I thiamloh ni loah midang nen in inkawmna a keh chhe fo thin em? Aw □ Aih □
77. Malin I inhria em? Aw □ Aih □
78. I thu hril apiang I ti ve zel thin em? Aw □ Aih □
79. Rannung chhaih vel hi nuam I ti em? Aw □ Aih □
80. I thil tih emaw nangmahah midangin diklo an hmuhin I rilru a na thin em? Aw □ Aih □
81. Hun pawimawh emaw I hnaah I tlai thin em? Aw □ Aih □
82. Ri luih luih leh phur luih luih tamtak karah awm nuam I ti em? Aw □ Aih □
83. Midangin hlau che se I duh em? Aw □ Aih □
84. A changa thothang tha tak, achanga ngui leh si I ni em? Aw □ Aih □
85. Vawina tih tur naktuka tihah I dah fo em? Aw □ Aih □
86. Mi thothang tha takah midangin an ngai che em? Aw □ Aih □
87. Miin dawt an hrilh fo che em? Aw □ Aih □
88. Thil khawih riau tu che I nei em? Aw □ Aih □
89. I tih diklohah I thiamlohna pawm fo I inhuam em? Aw □ Aih □
90. Rannung thanga tang hmu la I khawngaih viauangem? Aw □ Aih □

ZAWHNA KIM TAKIN I CHHANG ANI TIH ENDIK HRAM ANG CHE

PAGE No.	P	E	N	L
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Appendix- XIII

THE FAGERSTROM TEST FOR NICOTINE DEPENDENCE

(FTND: Heatherton, T.F., Kozlowski, L.T., Frecker, R.C., Fagerstrom, K.O., 1991)

(ENGLISH)

1. How soon after you wake up do you smoke your first cigarette?

Score

- Within 5 minutes 3
- 6–30 minutes 2
- 31–60 minutes 1
- After 60 minutes.....0

2. Do you find it difficult to refrain from smoking in the places where it is forbidden (e.g., in church, at the library, in cinema)?

- Yes.....1
- No 0

3. Which cigarette would you hate most to give up?

- The first one in the morning 1
- Any other 0

4. How many cigarettes/day do you smoke in a day?

- 10 or less 0
- 11–20.....1
- 21–30.....2
- 31 or more 3

5. Do you smoke more frequently during the first hours after waking than during the rest of the day?

- Yes.....1
- No 0

6. Do you smoke if you are so ill that you are in bed most of the day?

- Yes.....1
- No 0

Appendix- XIV

THE FAGERSTROM TEST FOR NICOTINE DEPENDENCE

(FTND: Heatherton, T.F., Kozlowski, L.T., Frecker, R.C., Fagerstrom, K.O., 1991)

(MIZO)

1. I zing thawh atanga eng anga reiah nge meizial hmasa ber I zuk?

Score

- Minute 5 chhungin.....3
- Minute 6–30 2
- Minute 31–60.....1
- Minute 60 hnuin.....0

2. Meizial zuk phallohna hmunahte insum har I ti em (entirnan, biakin, library, ennawm en naah te)?
   - Aw.....1
   - Aih.....0

3. Eng huna I meizuk nge nghei atana I ui ber?
   - Thawh hlim zuk hmasak ber 1
   - Adang zawng.....0

4. Nikhatah meizial engzat nge I zuk thin?
   - 10 emaw, aia tlem.....0
   - 11–20.....1
   - 21–30.....2
   - 31 emaw aia tam.....3

5. Hun dang zawng aiin zing thawh hlim darkarah meizial I zu nasa zawk em?
   - Aw.....1
   - Aih.....0

6. Khum beta I damlohin meizial I zu tho em?
   - Aw.....1
   - Aih 0

Appendix- XV

THE FAGERSTROM TEST FOR NICOTINE DEPENDENCE

(FTND: Heatherton, T.F., Kozlowski, L.T., Frecker, R.C., Fagerstrom, K.O., 1991)
(ENGLISH)

Fagerstrom Ouestionnaire for Smokelesss Tobacco User:

1. After a normal sleeping period, do you use smokeless within 30 minutes of waking?

   a. Yes 1 b. No 0

2. Do you use smokeless tobacco when you are sick or have mouth sores?

   a. Yes 1 b. No 0

3. How many times do you use per week?

   a. Less than 2 times 0 b. More than 2 times 1 c. More than 4 times 2

4. Do you intentionally swallow your tobacco juices rather than spit?

   a. Never 0 b. Sometimes 1 c. Always 2

5. Do you keep a dip or chew in your mouth almost all the time?

   a. Yes 1 b. No 0

6. Do you experience strong cravings for a dip or chew when you go for more than two hours without one?

   a. Yes 1 b. No 0

7. On average, how many minutes do you keep a fresh dip or chew in your mouth?

   a. 10-19 minutes 1 b. 20-30 minutes 2c. More than 30 minutes 3

8. What is the length of your dipping day (total hours from first dip/chew in a.m. to last dip/chew in p.m.)?

   a. Less than 14.5 hours 0 b. More than 14.5 hours 1

   c. More than 15 hours 2

9. On average, how may dips/chews do you take each day?

   a. 1 - 9 times 1 b. 10 - 15 times 2 c. >15 times 3

Appendix- XVI

THE FAGERSTROM TEST FOR NICOTINE DEPENDENCE

(FTND: Heatherton, T.F., Kozlowski, L.T., Frecker, R.C., Fagerstrom, K.O., 1991)
(MIZO)

Fagerstrom Ouestionnaire for Smokelesss Tobacco User:

1. Zing I thawh atanga minute 30 inkarah vaihlo I hmuam nghalthin em?

   a. Aw 1 b. Aih 0

2. I damloh emaw ka chhung na I neihin vaihlo hmuam chi I hmang thin tho em?

   a. Aw 1 b. Aih 0

3. Kar khatah vawi engzat nge I hmuam?

   a. Vawi hnih aia tlem 0 b. Vawi hnih aia tam 1 c. Vai li aia tamn 2

4. Vaihlo I hmuam tui hi I lem thin nge I chhak chhuak?

   a. Lem Ngailo 0 b. A changin 1 c. Eng lai pawhin 2

5. Vaihlo hi engtiklai pawhin I hmuam deuh reng em?

   a. Aw 1 b. Aih 0

6. Vaihlo hmuam lova darkar hnih aia rei I awmin, I hmuam chak zek zek thin em?

   a. Aw 1 b. Aih 0

7. A tlangpuiiin, eng anga zingin nge vaihlo hi I hmuam thlak thin?

   a. Minute 10-19 1 b. Minute 20-30 2 c. Minute 30 aia tam 3

8. Ni khatah hian eng anga rei nge vaihlo hi I ka chhungah a awm? (Zing I hmuam tirh atanga zana I hmuam hnuhnung ber thlenga chhutin)

   a. Darkar 14.5 aia tlem 0 b. Darkar 14.5 aia tam 1

   c. Darkar 15 aia tam 2

9. A tlangpuiin, vaihlo hi vawi engzat vel nge nikhatah I hmuam ang?

   a. Vawi 1 - 9 1 b. Vawi 10 - 15 2 c. Vawi 15 aia tam 3

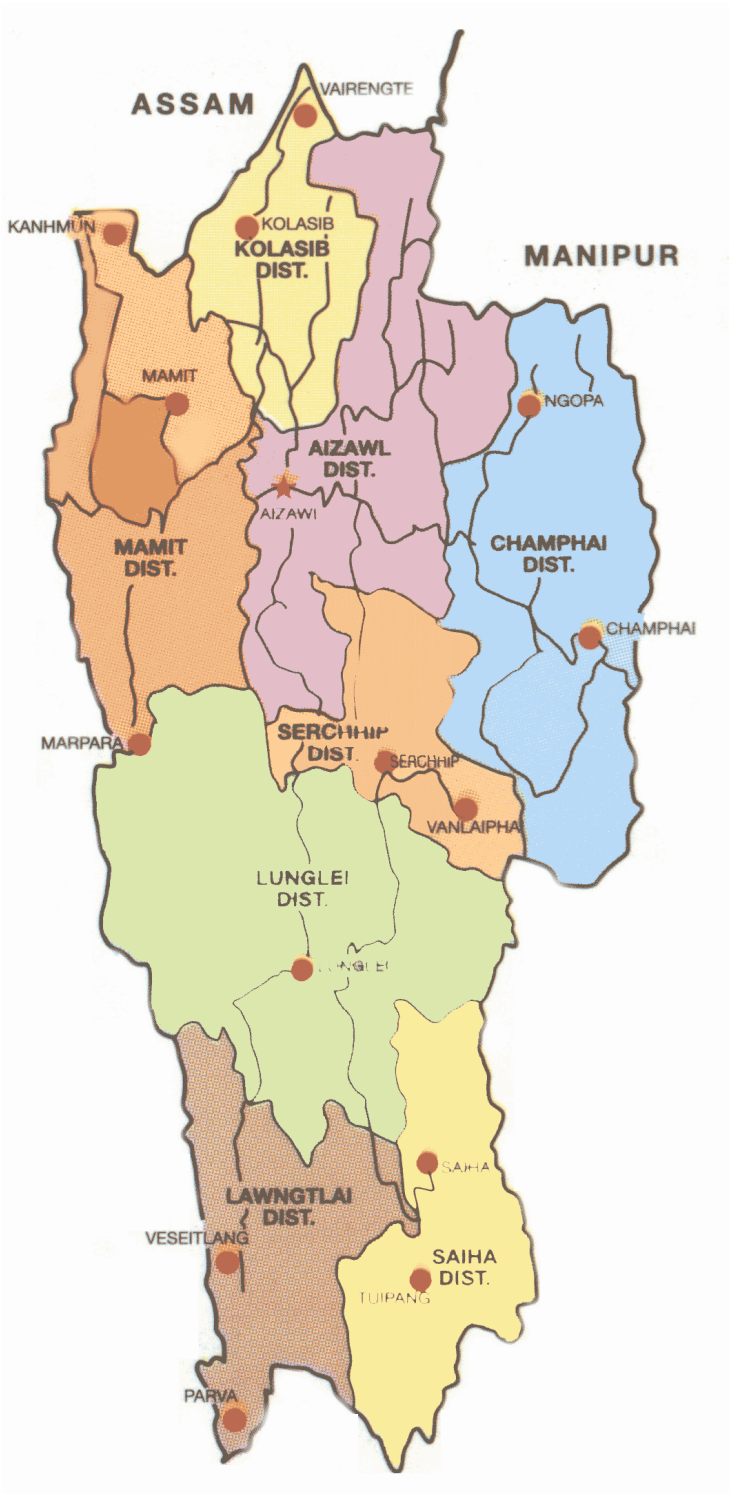
Appendix-XVII

MAP OF INDIA

(Showing the location of Mizoram State)

Appendix-XVIII

MAP OF MIZORAM STATE



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Title of Dissertation	:	"Tobacco Dependence among Mizo Adults: A psychological Analysis"
Date of Admission	:	20.07.2009
Approval of Research Proposal		
1. Board of Studies	:	09. 04.2010
2. School Board	:	27. 04.2010
Registration No.& Date	:	MZU/Ph.D/316 OF 27.04.2010
3. Academic Council	:	22.06.2010.
Extension (If any)	:	Nil

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