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Publication Date

1983

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STRESS, COPING, AND SMOKING CESSATION

by

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DISSERTATION

Submitted in partial satisfaction of the requirements for the degree of

DOCTOR OF PHILOSOPHY

in

PSYCHOLOGY

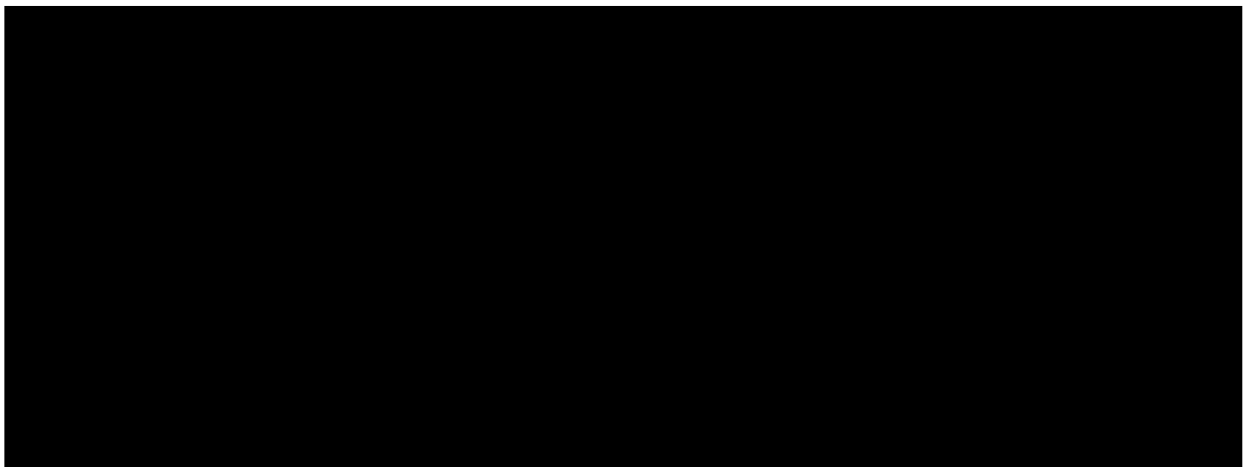
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Stress, Coping, and Smoking Cessation

Meryl Silber Brod

ABSTRACT

The relationship of stress and coping to smoking cessation was studied in 111 smokers participating in a smoking treatment program. Smokers were randomly assigned to either a behavioral, a nicotine chewing gum, or a combined treatment condition. Smoking status was determined at end of treatment and at six-month follow-up. Measures of stress and of coping were taken at pre-treatment, end of treatment and at six-month follow-up. Stress was assessed by the Schedule of Recent Experience and the Daily Hassles Scale. Coping was assessed by the Ways of Coping Scale and by the Smoker's Coping Scale, which was developed for this study.

Quitters during treatment were found to use more coping strategies which they considered to be successful. Continued smokers used more self-defined unsuccessful strategies. Considerable overlap in the strategies used by both groups was found. These strategies included both cognitive and behavioral efforts. Frequency of coping efforts did not differentiate groups.

A trend was found suggesting a synergistic effect of major life stress and minor daily hassles on smoking status. No support was found for the hypothesis that life changes or daily hassles during treatment result in lower quit rates.

It was hypothesized that initial nicotine intake, self-efficacy

expectations and social support would mediate the effects of stress and coping. This hypothesis was not supported. Possible explanations for these negative findings were offered.

It was concluded that coping plays an important role in smoking cessation. The findings of this study suggest the need to include coping as a variable in future smoking studies. The implications for improving treatment techniques to increase quit rates were discussed.

ACKNOWLEDGEMENTS

Many thanks to my committee, Dr. Sharon Hall, Dr. Frances Cohen and Dr. Allan Bostrom, for their guidance and quiet encouragement through all the ups and downs of the research and writing process. A special thank you to Dr. Hall and Dr. Cohen. You have not only generously shared with me your expert skills and knowledge for the past several years but have also provided me with superb role models for the professional woman I hope to be. Thank you also to Chrystall Tunstall, Deborah Rugg, Joan Drues and Carol Lippold for their assistance in administrating and conducting this study.

To my friends who have stood by me in these often difficult years --I raise my glass, brimming over with thankfulness for having known you. Alice, thank you for eating all those cold salads with such grace. Jan, for all those things I would have eaten if you weren't there. The two of you have not only enriched my life beyond words but have helped reshape the very fiber of who I am.

To my family, without your support and faith I would have never been able to do any of this. You never doubted me, even when I doubted myself. You were and are always there when I need you. The thought of banana bread and apple strudel kept me going when nothing else could. I love you all.

DEDICATION

to MICHAEL,
without whom there would be much less joy

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CHAPTER ONE

REVIEW OF THE LITERATURE

Coping

The relationship of coping and cigarette smoking has been suggested by several theoretical models of smoking (Lichtenstein, 1982; Marlatt & Gordon, 1980; Ockene, Nuttal, Benfari, Hurwitz, & Ockene, 1981, 1982). For example, the social learning approaches (Lichtenstein, 1982) assert that successful quitting requires training in dealing with discomforts involved in cigarette deprivation, developing substitute responses to replace smoking, recognition and modification of antecedent smoking cues and altering smoking consequences. However, supporting evidence for these approaches is still weak and conflicting (Lichtenstein, 1982). These unclear findings may be due to two sources of confusion: 1) inappropriate confounding of the concept of coping with the concept of skills acquisition and 2) difficulty in separating out and evaluating the different components and contributions of coping, coping skills training and type of cessation treatment employed in multicomponent programs. In addition, the teaching of coping skills to increase quit rates may be premature as there is no direct evidence that successful quitters actually engage in a greater number or more appropriate types of coping behaviors.

A corollary, also still unsubstantiated, is that smoking is a

way of coping with stress. The psychosocial model of smoking cessation and maintenance assumes "that chronic smoking is a maladaptive behavior, helping the smoker to deal with the discomfort generated by stress by providing a means he or she can use to maintain a vital balance" (Ockene, Nutall, Benfari, Hurwitz, & Ockene, 1981, p. 623). There have been numerous references supporting the idea of smoking as a way of coping (Ague, 1973; Frith, 1971; Ikard & Tompkins, 1973). The reasons smokers give for their smoking as well as the situations they report smoking in clearly suggest that smoking helps them deal with stress. Smoking has been called a way of quieting nerves (Lawton & Philips, 1956), reducing tension (Ikard & Tomkins, 1973), or a way of feeling and acting better under difficult conditions or when feeling stressed (Marlatt & Gordon, 1980).

Definition

Coping is any action or intrapsychic attempt to meet the demands of transactions between a person and their environment. It serves the dual function of altering the relationship between the individual and the environment and regulating emotions which arise from the stressful event (Lazarus & Launier, 1978). These two functions are attempts by the individual to manage or control thoughts, feelings and/or behavioral impulses resulting from a change in the equilibrium of their milieu. Differences in individual psychological and physiological reactions to stressor events may be partially explained by differences in coping (Coyne & Lazarus, 1981). For a more detailed discussion of coping see Lazarus (1981), Folkman, Schaefer, and Lazarus (1979), and Roskies and Lazarus (1980).

There are many definitional issues which plague the coping literature. For example, should coping be defined in terms of its effect (successful or unsuccessful outcomes)? Is it the number of coping strategies used or is it the type of strategy employed which is more important? This study will begin to address these questions. The definition used in this study is that coping is any attempt by the individual to manage or control the demands and strains which accompany behavior change. Both demands and the attempts to deal (cope) with these demands can be internal and/or external as well as behavioral and/or intraphysic. Many smokers attempt quitting and are unsuccessful. This does not imply however that these smokers did not attempt to quit or employ coping strategies (albeit unsuccessfully) in that attempt. Whether or not the coping attempt is successful at managing the strain is not a part of the definition used here. This is so the occurrence of coping behavior is not confounded with the successful or unsuccessful outcome of treatment.

Measurement

The empirical study of the effects of coping has been hindered by the lack of and quality of techniques available to measure the concept. There are two distinct ways of evaluating and conceptualizing coping; as a dispositional trait or as a process state (Averill & Opton, 1968). Until recently the trait concept of coping has predominated (Andrew, 1970; Byrne, 1964; Gardner, Holzman, Klein, Linton, & Spence, 1959). Measurement of coping has relied predominantly on rating from interviews, observations of behavior, or by

classification of an individual as a particular type (i.e., denier or repressor) from questionnaire responses. (See Moos, 1974, for a review of dispositional measures for assessing coping.) The conceptualization of coping as a process rather than as a trait does not make the assumption of consistency in coping behavior. In addition, the effects of mediating influences on coping which may vary over time can also be more accurately assessed (Cohen & Lazarus, 1979). Smoking cessation is a process which occurs over time and has different phases (e.g., quitting, maintenance). Mediating variables and coping efforts may vary or have different consequences at different points in this process. For these reasons, coping is conceptualized as a process state measure for the purpose of this study.

This study will use a recently developed measure of coping, the Ways of Coping Scale (Folkman & Lazarus, 1980). This scale is specifically designed to measure the number of coping strategies employed in a specific stressful situation as well as to provide information on type of coping strategies used. The scale consists of a checklist of 68 items which describes a wide variety of thoughts and actions people use to deal with taxing events. The subject thinks about an event or situation that has been stressful during the past few months and checks "Yes" or "No" if he or she used that mode of coping. The items are derived from the theoretical framework of Lazarus and his colleagues.

Smoking Behavior as a Coping Strategy

There is no shortage of potential reinforcing and pleasurable aspects to smoking. Smoking reinforces and is reinforced "by the enjoyment of oral, manual and respiratory manipulations involved in the process of lighting, puffing and handling cigarettes: the pleasure and relaxation associated with using alcohol, finishing a meal, or drinking coffee and the perceived diminution of unpleasant, affective states of anxiety, tension, boredom, or fatigue" (Lichtenstein, 1982, p. 806). These psychosocial, sensory, oral, and physiological concomitants help make smoking a practical and effective coping strategy.

If it is true that smoking is a coping strategy then (1) the reasons people report for smoking may reflect functions which help them to transact with their environment, (2) performance while smoking may be improved, (3) there may be physiological effects of smoking which facilitate coping or (4) it may be difficult for the confirmed smoker not to smoke in situations where coping is needed.

Smoking as an Adolescent Coping Strategy

A smoker's first cigarette is often smoked under conditions of peer pressure and social necessity. This adolescent experimentation is usually accompanied by feelings of anticipation of the smoking event as well as the anxiety and stress associated with socialization tasks. From the time of the smoker's first cigarette, the act of smoking is often associated with social acceptance and coping with both external (social) and internal (physiological) stressors. In

adolescence, the smoker is likely to find that the behavior is a useful tool, especially in difficult social situations. Not only does it give him or her something to do but the giving and receiving of cigarettes help establish friendships (Stephey, 1980).

Smoking as an Adult Coping Strategy

McKennell (1970) found that smoking continues to serve functions for adults and that the majority of these functions involve modifying or coping with person-environment transactions. A factor analysis of a 42 item questionnaire of reasons for smoking yielded factors of nervous irritation, relaxation, smoking alone, activity accompaniment, food substitution, and social confidence. Addiction, as rated by the smoker's subjective cravings for cigarettes, was highest for those who were both nervous irritation and relaxation smokers. Ikard and Tomkins (1973) have also classified smokers according to the function that smoking serves. Smoking can (1) arouse positive affect, (2) reduce negative affect, (3) satisfy an addiction and/or (4) satisfy a habit. Classification of smokers into high arousal versus low arousal situations (Frith, 1971) or tranquilizing versus stimulation smoking (Russell, 1978) imply that the act of smoking either initiates or facilitates emotion. This regulation affects coping efforts vis-a-vis its management of psychological and/or environmental strains and tensions. In addition, the type of situation which is considered difficult may be different for different classes of smokers (Frith, 1971). Physiological evidence from electroencephalographic (EEG) recordings confirms that there is a

differential effect of smoking depending upon circumstances. Particularly relevant is the finding that smoking was found to have a depressant effect on the EEG when subjects were stressed but a stimulant effect under low arousal conditions (Mangan & Golding, 1978).

Smoking as a Coping Strategy During Performance Tasks

Level of performance is related to smoking. Smoking has been found to facilitate performance while deprivation disrupts it. In vigilance tracking tasks, deprived smokers have significantly more tracking errors than either smokers or non smokers. This finding can easily be attributed to nicotine withdrawal effects. However, hour by hour recordings of reaction time showed a significant difference in the slope of between-hour reaction time while doing the task for non smokers as well as deprived smokers but not for smokers (Heimstra, Bancroft, & DeKock, 1967). This may indicate that smoking is acting as a coping strategy counteracting the gradual performance decrement which usually results from boredom and/or fatigue of long term tasks. Similarly, Wesnes and Warburton (1978) found that smokers, while smoking during an 80-minute vigilance task, did not show a performance decrement while both smoking deprived and nonsmokers did. These differences were significant only during smoking conditions (as compared to non-smoking conditions), again indicating that nicotine deprivation could not account for the significant findings. Smokers also tolerate significantly more shocks when smoking a high rather than a low nicotine cigarette.

Perhaps even more relevant is the finding that smokers also tolerate significantly more shock while simulating smoking, indicating that there is a psychological aspect to the act of smoking which increases tolerance to stress. No significant differences in level of shock tolerated by non smokers was found (Nesbitt, 1973). The author concluded that smokers behave less emotionally when smoking and so are better able to cope with stress.

The finding that increased nicotine further enhanced coping may also suggest that there is a dual psychological and physiological effect of smoking which enhances coping. In contrast to these previous findings, a study by Knapp, Bliss and Wells (1963) did not find a significant decrease in performance of psychomotor tests during five consecutive days of nicotine deprivation compared with controls. However, it was found that during simple questioning, verbal comments felt to represent expressions of latent anxieties were easily aroused only for the abstinent group. Heimstra, Bancroft and DeKock (1967) found that smokers did not significantly increase their ratings of aggressive feelings over a six hour period of simulated driving while both deprived smokers and non-smokers did.

Animal studies have found that nicotine administration counters stress-induced suppression of food acquisition behavior in monkeys (Hutchinson & Emley, 1973). The spontaneously occurring freezing of rats in the presence of cats can be significantly reduced by administration of nicotine (Nelson & Goldstein, 1978). These findings, along with the findings by Nesbitt (1973) suggest that there is also a purely nicotine effect which may enhance performance or coping.

Coping and Relapse

The use of smoking as a coping strategy is further supported by the findings on relapse situations after successful quitting. These situations are not only major stressful events but are also situations which evoke strong emotional responses and/or difficult challenges. Marlatt and Gordon (1980) found that three-quarters (76%) of all relapse episodes reported by smokers, alcoholics and heroin addicts fell into just three categories: (1) coping with negative emotional states (43% for smokers) (2) social pressure (25% for smokers) and (3) coping with interpersonal encounters (12% for smokers). In interpersonal settings, almost all (82%) of the relapse episodes involved coping with frustration and/or anger. In the intrapersonal settings, other negative emotions (i.e., fear and anxiety) predominated.

Thus, evidence is strong that relapse occurs in situations which call for coping efforts. Relapse occurs because (1) the individual is faced with a high-risk situation for potential relapse with no alternative or effective coping strategies available and (2) the old coping strategy (smoking) is an attractive and readily available strategy (Marlatt & Gordon, 1980).

Physiological Effects of Nicotine

Additional complementary evidence for the premise that the function of smoking is as a coping strategy comes from the physiological studies on nicotine dependence. The nicotine-regulation model assumes that smoking serves the function of regulating or titrating

the level of nicotine in the blood and that a departure from optimal levels stimulates smoking behavior. Smokers will increase the number of cigarettes smoked and/or the depth of inhalation of each puff in order to increase nicotine intake when switched from a high nicotine to a low nicotine cigarette (Jarvik, 1973). There is substantial evidence in support of the model (e.g., Henningfield & Griffiths, 1980; Jarvik, 1973; Russell, Feyerabend, & Cole, 1976).

The nicotine-regulation model was originally proposed as a physiological model. However, this does not exclude its role as a psychological tool. In fact, findings on the physiological effects of nicotine support the idea of smoking as a coping strategy. There are several effects of nicotine which could enhance or aid coping efforts by either affecting the perception of psychological states or by its actual effects on physiological functions.

Nicotine produces changes in central nervous system functioning by (1) affecting EEG pattern, (2) decreasing skeletal muscle tone and, (3) decreasing deep tendon reflex (Vollie & Koelle, 1975). These last two effects can easily be perceived as relaxing. In contrast to this, nicotine also has sympathetic-like effects including increasing blood pressure and heart rate as well as release of epinephrine in the blood. This effect may feel like an "energy rush" allowing the smoker to feel "geared up for action" or better able to cope with difficulties and challenges. Animal studies have found that nicotine stimulates the release of norepinephrine and dopamine in the brain thus increasing or inhibiting release of acetylcholine depending upon dose. This alkaloid appears to facilitate memory and

reduce aggression which may further enhance or facilitate performance or positive affective functioning (Vollie & Koelle, 1975). Attempts to integrate the physiological with the psychological effects of nicotine have been confusing due to its paradoxical effects. Nicotine has been shown to increase autonomic nervous system end-organ arousal on one hand while at the same time producing a tranquilizing effect on self-report and behavioral indices of emotion (Gilbert, 1979).

It takes approximately seven seconds for nicotine, absorbed through the lungs, to reach the brain. This "shot" of nicotine, felt after every puff, represents a "hit" of pleasure and ensuing nicotine effects. An average smoker puffs each cigarette 10 times. Smoking a pack a day, this means that a smoker receives 200 "hits" a day or 70,000+ nicotine shots a year (Russell, 1978).

There is undoubtedly some degree of nicotine addiction which is important for the function of smoking. However, a purely physiological model will not account for the reasons why people continue to smoke (Gilbert, 1979; Shifman & Jarvik, 1976). Without the inclusion of psychological cognitive factors, the function of smoking behavior cannot be fully understood. The multiple regulation model (Leventhal & Cleary, 1980) suggests that it is departures from emotional homeostasis (i.e., stress) which stimulate smoking behavior as an attempt to gain control (i.e., cope) over fluctuations in emotional states by returning conditioned drops in nicotine levels to baseline. This conditioning occurs as beginning smokers use smoking in a variety of stressful situations. These situations provide the

negative emotion that is conditioned to drops in plasma nicotine. The act of smoking concomitantly instills a sense of security and acts to delay social anxiety, thus further conditioning an association between smoking behavior and positive emotional feelings. The core of this model is that smoking behavior primarily serves the function of emotional regulation, a primary function of any coping behavior, and that nicotine levels are also being regulated because certain emotional states have become conditioned to them. Smoking not only generates a positive emotional state that can cancel the negative effects of stress but also facilitates reactions that can directly enhance adaptation and be useful for coping. For example, smoking increases neural activation and can increase alertness. This effect would be a successful coping tool in an intellectually challenging situation.

Stress

Smoking behavior as a coping strategy may be engaged in more frequently when the smoker is faced with stressful situations or when feeling distressed. Although coping is engaged in to deal with many different situations, it becomes more of a necessity under stressful conditions. Smoking not only produces an almost immediate physiological effect which may help ameliorate feelings of distress and/or facilitate better physiological and psychological reactions to stressors, but is also a convenient, readily accessible and easily engaged in coping strategy (Leventhal & Cleary, 1980).

Definition

Stress has become one of the most often used as well as misused words in today's society. Confusion and disagreements about the concept have arisen from this popularity. The confusion includes definitional issues, how the concept is to be measured, and the impact of the phenomenon. Perhaps the major confusion surrounds the use of the term indiscriminately as both a stimulus and/or a response. Conceptions range from a physiological response of the sum of all non-specific changes caused by damage or demand (Selye, 1977) to an event (either desirable or undesirable) which requires a degree of adaptation (Holmes & Masuda, 1974). The definition of stress being used in this study is as any stimulus which requires a response by the individual. The stimulus may be any thought, action or event which is perceived, consciously or unconsciously, as causing psychological and/or physiological distress. This definition was chosen so as not to confound stress, as a stimulus, with the response of changes in smoking behavior which may be affected by those stresses. These stressor events are the triggers which may activate a sense of distress and/or require some degree of coping or energy expenditure on the part of the individual who is experiencing them. Four types of stress events have been distinguished. They are (1) acute-time limited events; (2) stress event sequences; (3) chronic intermittent stressors; and (4) chronic stress conditions (Cohen, 1981). This study will consider chronic and acute stress. Acute stress will be measured by a scale tapping major life events. This includes acute time limited events (e.g., surgery), and stress event sequences

(e.g., divorce). Chronic stress will be measured by a daily hassles scale. This includes everyday happenings (e.g., care for pets) as well as longer term life concerns (e.g., concerns about retirement).

Measurement

The issue of measurement of these stressor events has evoked almost as much controversy as the term itself. The Holmes and Rahe Schedule of Recent Experience (1967) has been the standard measure to record major life events. The accumulation of the number of these stressor events has been found to be positively correlated with consequences ranging from increases in reported illness (Holmes & Rahe, 1967; Holmes & Masuda, 1974) to increases in number of cigarettes smoked (Lindenthal, Myers, & Pepper, 1972). However, criticisms have been raised against the scale, including its omission of intervening variables (Dohrenwend & Dohrenwend, 1978) and the large sample sizes which have allowed for significant but small correlations (Rabkin & Struening, 1976). Nevertheless, the scale still appears to be the most commonly used measure to record life events and does provide a simple and clear record of the number of events which have occurred within a specific time period. The reliability of recall of events occurring within the preceding six months is significantly greater than for longer periods (Jenkins, Hurst, & Rose, 1979). Part of the difficulty with the use of the scale may not be the measure itself but the interpretations and conclusions drawn from the scale score. These interpretations have been based on theoretical models of the effect of stress rather than respecting the

limits of the information the scale is able to offer. Detailed reviews of the scale can be found elsewhere (Dohrenwend & Dohrenwend, 1978; Rabkin & Struening, 1976)

In contrast to the recording of major life events, the Daily Hassles Scale has recently been developed to provide a measure of the frequency and intensity of impact of common everyday stressor events or hassles (Kanner, Coyne, Schaefer, & Lazarus, 1981). Despite its whimsical name, the scale is psychometrically and conceptually well formulated. In a one year study of stress, coping, and emotions, the Daily Hassles Scale (administered nine times) was found to be a better predictor of concurrent and subsequent psychological symptoms as measured by the Hopkins Symptoms Check List than the Schedule of Recent Life Events (Kanner et al., 1981). The mean number of hassles reported was 20.6 with a standard deviation of 15.1. At two months, hassle frequency correlated 0.60 with psychological symptoms and 0.49 at 10 months. In another study, the Recent Life Events Scale was not found to be related to self-reported somatic health whereas mean Daily Hassles frequency and intensity scores were significantly related to both initial and final health status (DeLongis, Coyne, Dakof, Folkman & Lazarus, 1982). The average correlation of daily hassles in adjacent months was found to be 0.79 for frequency and 0.48 for intensity (DeLongis et al., 1982) indicating that the frequency of daily hassles is consistent over time although the intensity of these hassles is somewhat more variable. Frequency and intensity of hassles were found to significantly correlate with each other though at low levels ($r = .26$, $p < .01$).

Both measures of stress are being included in this study because:

1) The Schedule of Recent Experience is a distal measure of life events. The Daily Hassles Scale provides a proximal measure of more immediate stressful events which may be more relevant to the day to day effort of quitting smoking.

2) There may be a combined effect of major life events and daily hassles which influences smoking behavior. Daily hassles may only affect behavior if a degree of background acute stress is also present.

3) Correlations between the Schedule of Recent Experience and health outcomes have been weak and the scale has been criticized on a number of methodological and theoretical grounds. However, it is a well used standard measure of acute stress and does represent one conceptual dimension of stressful events.

Smoking Behavior under Stressful Conditions

Increases in the percentage of smokers and the number of cigarettes smoked in Israel during the Yom Kippur war have been reported (Ben-Meir, 1977). The incidence of smoking in populations that may be highly stressed, such as women, is increasing. Lower socioeconomic classes have a larger percentage of smokers than the more privileged classes (U.S. Surgeon General Report, 1980).

It follows that if smoking is a coping strategy there should be an increase in smoking under stress. The following evidence supports this conclusion. Smoking behavior questionnaires have found that

from 50 to 71% of smokers report smoking more during periods of stress (McArthur, Waldron, & Dickensen, 1958; Schneider & Houston, 1970) and that only 24% of these smokers sustained this increase beyond the period of stress (Schneider & Houston, 1970). Lindenthal et al. (1972) found that the greater the number of life events reported, the more likely smokers were to report an increase in their rate of smoking. This increase was especially pronounced when four or more events had been experienced. Life events were measured by a 62 item scale developed for this study which drew items from the Holmes and Rahe Schedule of Recent Experience scale (1967) as well as other measures of life events. Smokers also reported significantly more subjective quantitative work load and spent a greater percent of their time under great to extreme deadline pressures than non-smokers (Caplan, Cobb, & French, 1975). Horowitz, Benfari and Hulley (1979) measured stress in a sample of high risk coronary men and found that smokers reported more frequent and/or more serious life events than non-smokers. The measure of stress used was a list of 143 episodes weighted for seriousness of event and the event's remoteness in time from the present. Similar results were found when only a simple count of events occurring was used (Horowitz et al., 1979).

Psychological as well as environmental stress leads to efforts by the individual to cope with the resulting distress (Lazarus, 1981). If smoking is a coping strategy, then psychologically high stressed groups may have a higher percentage of smokers than non-smokers. Significantly more of the psychiatric than non-psychiatric population are heavy smokers (Lawton & Phillips, 1956). The more

psychologically impaired individuals are, the more likely they are to be frequent smokers regardless of race, sex, age or marital status (Leventhal et al., 1972). Smokers also report experiencing more anxiety and neuroticism than non-smokers (Matarazzo & Saslow, 1960). Heavy smokers describe themselves on an adjective check list as less agreeable, less happy and less relaxed than moderate smokers (Lawton & Phillips, 1956). Unfortunately, the question "Why do these populations continue to smoke more over time" cannot be answered from the available data. It may be that smoking is an unsuccessful coping strategy for these populations or that their initial level of stress is so high that even successful coping can only partially manage the strain.

The increases in smoking under stress may be partially explained by the physiological fact that stress leads to a decrease in urinary pH levels. Under this condition there is an increase in nicotine excretion which may result in increased smoking to raise blood nicotine levels. If the urine can be buffered by a base so that there is not an increase in nicotine excretion, smoking behavior is not affected (Schachter, Silverstein, & Perlick, 1977).

Smoking Cessation as a Stress

In addition to environmental stress that we all face, smokers may also face the stress of trying to quit. Smoking cessation has always been assumed to be a difficult event. The high number of people who continue to smoke or relapse after quitting attests to this belief. A recent Surgeon General's Report (1980) considered

cigarette smoking clearly the most preventable cause of premature death in this country. These realities however have not deterred approximately 35% of the population from smoking regularly. Seventy to eighty percent of smokers agree that the habit is harmful to their health and should be stopped. Many actually do try to quit either in varying types of structured quit-smoking programs or on their own. The average quit rate at six months follow-up for formal quit-smoking programs is approximately a disappointing 35% (Lichtenstein, 1982). The percentage of smokers who are successful at quitting on their own is unknown. For the average smoker, abstinence from cigarettes produces distress and by resuming smoking, this distress can be coped with or eliminated.

Nicotine deprivation for a smoker results in a withdrawal syndrome composed of psychological effects including: intense craving, tension, irritability, restlessness, depression, difficulty with concentration, as well as objective physiological changes such as a reduction in blood pressure and changes in electrical brain impulses (Vollie & Koelle, 1975). Shiffman and Jarvis (1976) intensively followed smokers during smoking cessation. They found that withdrawal symptoms were not uniformly severe across a 12-day period. Reports of desire to smoke and psychological symptoms showed a significant U-shaped relationship with number of days abstinent. No differences in these symptoms were found according to number of cigarettes initially smoked.

There is some evidence that smoking cessation may not be as stressful as popularly believed. One study found no significant

differences in reported affect, use of mental health facilities, psychotropic medications or alcohol from pre-treatment to a four-month follow-up (Pertschuk, Pomerleau, Adkins, & Hirsch, 1979). However, the sample size was so small ($N = 21$) that it is impossible to draw any conclusions from this study. It may be that the stress of quitting affects daily hassles and tensions rather than the major areas examined in this study, and/or that by four months the effects of the stress were no longer felt.

Mediators

The relationship between coping, stress and smoking behavior is not a simple linear one. There are individual differences in environmental, physiological, and cognitive factors which play a major role in determining final outcomes. Social support has been found to be an important environmental variable which plays an important role in mediating the effects of stress (Brownell, Heckerman, Westlake, Hayes, & Monti, 1978; Caplan, Cobb, & French; 1975, Ockene et al., 1981). Self-efficacy, a cognitive parameter, has been shown to be related to quitting behavior (Brod & Hall, Note 2; Condiotte & Lichtenstein, 1981; McIntyre, Mermelstein, & Lichtenstein, Note 5). In the physiological realm, individual differences in nicotine intake have been found to be related to smoking (Frith, 1971; Lawton & Phillips, 1956; Shifman & Jarvik, 1976).

Nicotine Intake

Nicotine intake dictates the level of nicotine in the blood and so may help modulate the degree of physiological dependency. Smokers have been found to regulate the number of cigarettes smoked and the depth of inhalation of puffs when switched from a high nicotine to a low nicotine cigarette in order to maintain a constant blood nicotine level (Jarvik, 1973). In a questionnaire, heavier smokers reported a desire to smoke in both high arousal and low arousal situations, whereas lighter smokers reported more of a desire to smoke only in low arousal situations (Frith, 1971). The findings are mixed as to whether or not heavy smokers have a harder time when trying to quit smoking. Shifman and Jarvik (1976) found no overall difference in desire to smoke, in physical or psychological symptoms between heavy and light smokers over a two week period in a cessation clinic. However, other studies report the less addicted smoker has less difficulty in giving up the habit (Russell, Rarr, & Jarvis, 1980).

The level of nicotine addiction is particularly relevant to this study as it relates to how frequently a smoker actually engages in smoking behavior. It is logical to assume that heavy, more addicted smokers, smoke more often and in more situations than light smokers. For the heavy smoker, smoking would be actively used as a coping strategy on a more regular basis and so would be associated with more different types of stressors. As a result, smoking may constitute a more central or primary coping strategy. Giving up this strategy and coping with the stress of cessation would be more difficult for the heavy than the light smoker.

Self Efficacy

Self-efficacy is defined as the person's belief that he or she can successfully execute a behavior that a particular situation calls for in order to produce the desired outcome (Bandura, 1977). The sense of self-efficacy is based on four sources of information: past performance accomplishments, vicarious experiences, verbal persuasions from others related to the behavior change, and cues from internal physiological states used to assess emotional and/or physical states. Perceived self-efficacy influences psychosocial functioning by its effect on the choice of behaviors engaged in, the effort expended, persistence level and self-guided thoughts. The higher the initial level of self efficacy, the greater will be the individual's ability to cope in a behavior change situation (Bandura, 1977).

The relationship between self-efficacy and smoking has been examined in a limited number of studies. The Pre-treatment Confidence Questionnaire has usually been the measure of self-efficacy used (Condiotte & Lichtenstein, 1981). The questionnaire asks subjects to rate their ability to resist the urge to smoke in 47 specific situations (e.g., while at a party). The scale has been a significant predictor of both quitting in and relapse after formal treatment programs (Condiotte & Lichtenstein, 1981). The relationship between self-efficacy, physical dependence on cigarettes and smoking status has also been studied. Physical dependence was not found to be correlated with follow-up smoking status where initial self-efficacy ratings were significantly related to six month follow-

up status (McIntyre, Mermelstein, & Lichtenstein, Note 5). DiClemente (1981), using his own 12 item efficacy scale, measured self-efficacy in successful quitters two weeks after cessation. At five month follow-up, maintained quitters were found to have had a significantly higher initial self-efficacy than recidivists. No differences were found for either demographic or smoking history variables. In addition, those with higher levels of self efficacy reported significantly less difficulty in maintaining non-smoking behavior. The Self-Efficacy Assessment (Brod & Hall, Note 3) was developed as a new measure of self-efficacy for smokers. It takes into account the contribution of the four basic components which form the efficacy expectation and is well suited to the treatment environment as it is brief (17 items) and easy to administer and complete. It has been found to significantly predict smoking status at the end of formal smoking cessation treatment and at six-month follow-up (Brod & Hall, Note 2).

Social Support

The availability of perceived social supports may be an effective moderator of the life stress-health relationship. There is sufficient evidence to conclude that social support, either perceived in the broad social milieu or as a more limited, significant other related phenomenon, protects people from the effects of stressful events ranging from job stress to unemployment (Caplan, 1974; Cassel, 1976; Kaplan, Cassel, & Gore, 1977). Unfortunately, there has been little systematic work on the relationship of social support to

smoking cessation (Lichtenstein, 1982). There are, however, four studies which are relevant. These studies have all conceptualized social support as a limited phenomenon pertaining directly to the cessation experience. Janis and Hoffman (1970) found that a daily contact buddy system resulted in a significantly greater decrease in number of cigarettes smoked at six weeks, six months and one year follow-up. In addition, buddy system smokers reported experiencing significantly less anxiety at end of treatment. Ockene et al. (1981) have proposed a theoretical model in which the effect of stress is mediated by the presence of the psychological variables of personal and social resources. They found that successful quitters received significantly more social support during treatment than continued smokers (Ockene, Benfari, Nuttall, Hurwitz, & Ockene, 1982). Lastly, Mermelstein, Lichtenstein and McIntyre (in press) found that the degree of spouse (or living partner) helpfulness measured at the end of treatment correlated .48 with smoking status at both three and six month follow-up. Contrary to these findings, Caplan, Cobb and French (1975) found that an interaction of social support with job stress was associated with quit rates. However, increases in quit rates were found only for those smokers with decreases in work load and responsibility and low levels of social support. The authors suggest that high levels of social support may actually facilitate smoking because of group pressure or social interaction stimuli encouraging social smoking.

Implications

These data imply that (1) often people characterize their smoking as pleasurable and relaxing; (2) people may perform better when smoking, and (3) people tend to smoke more when under stress. In addition, (4) smoking mitigates and facilitates difficult transactions between the smoker and the environment and (5) as such, may represent a powerful coping strategy for smokers.

The evidence presented on smoking as a coping style, has several implications for smoking cessation treatment:

1) If the smoker is going to give up this mode of coping, he or she will need new strategies or more frequent use of old strategies to take its place. Previous findings suggest that it is better to be armed with a repertoire of coping responses rather than any one particular one. In a study of coping and roles, Pearlin and Schooler (1978) found that no one coping response stood out as a "magic wand" in attenuating the relationship between stress and strains. In addition, smoking is an easily accessible and consistently employed strategy as the average smoker consumes one pack a day. The successful quitter may need to replace smoking with many different types of coping strategies. He or she may also need to use these strategies often to fill the behavioral void created by cessation and cope with the constant stress of refraining from urges to smoke,

2) Increased stress requires increased coping efforts. Therefore, under high levels of stress, it may be more difficult to give up well known and well used coping strategies. The physiological and

psychological effects of smoking cessation adds to the already present level of stress making coping efforts during this period all the more necessary and important. At the same time, smoking is not an available coping strategy, and

3) Any exploration of the relationship between coping, stress and smoking behavior should begin to include important mediating variables. Although it is impossible to look at all variables in any one study, every effort should be made to include the most relevant ones. At present, level of nicotine addiction, social support, and self-efficacy seem to be among the most promising variables.

CHAPTER TWO

HYPOTHESES

Four main hypotheses will be tested:

(1) It is hypothesized that successful quitting is positively correlated with the smoker's ability to have and use a repertoire of other coping strategies. Specifically, it is hypothesized that (a) quitters will have the expectation before starting treatment that they will use more types of coping strategies and use them more often than continued smokers; (b) quitters will use a greater number of coping strategies while in treatment.

(2) It is hypothesized that the occurrence of stressor events makes it more difficult to quit smoking. Specifically, it is hypothesized that the accumulation of major life events, the number of everyday stressor events, and the perceived severity of everyday stressor events will be negatively correlated with quitting smoking.

(3) It is hypothesized that smoking cessation is a stressful experience during which the individual is more likely to regard everyday events as stressors. Specifically, it is hypothesized that smokers will report a greater number of everyday stressor events when in treatment than they reported before entering treatment.

(4) It is hypothesized that the perception of stress created by everyday stressor events and the use of coping strategies is mediated by psychological and physiological factors. Specifically, it is hypothesized that those smokers who have an initially higher nicotine

intake, a lower self-efficacy and less social support will report a greater number of stressor events and use fewer coping strategies during treatment.

Exploratory Questions

In addition to the main hypotheses to be tested, the following exploratory questions will be addressed:

(1) Do successful quitters use different coping strategies while in treatment than continued smokers?

(2) What is the relationship between the number of daily stressor events reported and the type and frequency of coping strategies used during the course of smoking cessation treatment and follow-up?

(3) What is the relationship between everyday stressor events reported and coping strategies used during cessation treatment and follow-up?

CHAPTER THREE

METHODS

Subjects

Subjects were 111 smokers who volunteered to participate in a smoking treatment study conducted by the Habit Abatement Clinic at the University of California, San Francisco, Langley Porter Psychiatric Institute. Subjects were recruited via local newspaper, radio and television announcements as well as by word of mouth and referral. Selection criteria for participation were that they (1) be between the ages of 21 and 55, (2) be free of any cardiopulmonary disease or peptic ulcer, (3) not pregnant or planning to become pregnant before treatment, (4) have a physician's written consent attesting to the person's health and ability to participate in treatment, (5) provide a refundable \$75.00 deposit before treatment starts, and (6) attend a one-hour orientation meeting explaining the nature of the study. At this orientation, the research aspect of the cessation clinic was emphasized and questions concerning participation were answered. Any smoker not interested in joining was encouraged to leave without jeopardizing his or her ability to join at a later date.

Procedure

Treatment Conditions. Subjects were randomly assigned to one

of three different cessation treatments: (1) behavioral, (2) nicotine chewing gum, or (3) combined behavioral and nicotine gum.

The behavioral treatment included aversive smoking in which the subjects smoked three cigarettes of their own brand at a rate faster than normal (puffing and inhaling every 30 seconds) while being videotaped. The purpose of the procedure was to provide an immediate, intense experience to emphasize the toxicity of smoking. It was also designed to break the smokers' positive association with cigarettes. The videotape was replayed after the subjects finished smoking to provide a visual image of their smoking. These sessions were interspersed with relapse prevention sessions which included techniques focusing on the psychological and social factors dealing with maintaining non-smoking and high risk situations for relapse. Treatment was conducted in groups of five to six people, consisting of 14 (1 hour and 15 minutes) sessions over a six-week period. The major portion of treatment was over at week 03.

The nicotine gum condition used a nicotine-infused gum, Nicorette, prepared by the Dow Chemical Company for use in this study. Educational materials, brief discussions of behavioral techniques and group support were also available. Treatment was conducted in groups of five to six people, consisting of four sessions over a three-week period. Chewing nicotine gum produces blood nicotine concentrations similar to tobacco smoking. Its primary therapeutic value is its ability to lessen withdrawal symptoms created by nicotine deprivation. Early studies using similar gums did not find significant differences from placebo gums (Turner, Taylor, Sillet, & McNicol,

1977). Recently, improvements in the gum and more information on how to use the gum correctly have improved quit rates. A study comparing a psychological intervention with and without nicotine gum found a significant difference in quit rates. The gum group had a 63% abstinence rate at 6 months whereas the psychological intervention group only had a 45% quit rate (Fagerstrom, 1978). Similar studies, comparing nicotine gum to single dimension psychological interventions, report quit rates of 67% (Raw, cited in Russell, Raw & Jarvis, 1980) and 68% (Wilhelmson & Hjalmarsson, 1980) at one year follow-up for those using the gum for at least three months.

The combined treatment followed a similar format as the behavioral condition with the addition of a nicotine gum as a cessation aid.

Collection of questionnaire data and assessment procedures were the same for all treatment conditions. Pre-treatment questionnaires were contained in a questionnaire packet which all subjects received at the orientation session. The questionnaires were completed at home before treatment began. If a subject did not complete them before the first treatment group he or she was instructed to do so before the meeting began. The questionnaires included in the packet were: The Daily Hassles Scale, Schedule of Recent Experience, Smokers Coping Scale, Ways of Coping Scale, Pre-Treatment Confidence Questionnaire, Social Support Index, and the Self Efficacy Assessment. Pre-treatment blood cotinine level was measured by blood assay in a one-hour laboratory session also completed before treatment began. Subsequent questionnaire data was collected at assessments

held at week 03 (end of treatment) and week 26 (six-month follow-up).¹ At week 03, all subjects completed the Daily Hassles Scale and the Smokers Coping Scale. At week 26 all pre-treatment questionnaires were repeated. See Table 1 for Scale Administration Schedule. Incorrectly completed questionnaires were not included in the data analysis. As a result, the number of subjects used for each analysis varies depending upon the number of correctly completed relevant scales. Smoking status (abstinent versus continued smoking) was also reported at week 03 and week 26 assessments. Refunding of the \$75.00 deposit was contingent upon the subject's participation in these assessments. If subjects did not appear for follow-up, they were contacted by telephone and every effort was made to reschedule the appointment. If they refused to have the laboratory assessment done they were mailed the questionnaires and requested to complete and return them by mail.

Measures

Schedule of Recent Experience. The Schedule of Recent Experience (Holmes & Rahe, 1967) is a checklist of 43 major life changes (e.g., death of a spouse, divorce, changes in residence, pregnancy). A simple count of the number of events occurring in the past six months was used for the score. Studies have shown that there is no significant difference in relationships between life events and outcome measures whether scores are computed by simple counts versus

Table 1
Measures and Administration Schedule

The following instruments were used.

<u>Variable</u>	<u>Measure</u>	<u>Time of Administration</u>
(1) Level of perceived stress	(a) Daily Hassles Scale	Pre-treatment (week 00) End of treatment (week 03) 6-month assessment (week 26)
	(b) Schedule of Recent Experience	Pre-treatment (week 00) 6-month assessment (week 26)
(2) Coping	(a) Smokers Coping Scale	Pre-treatment (week 00) End of treatment (week 03) 6-month assessment (week 26)
	(b) Ways of Coping	Pre-treatment (week 00) 6-month assessment (week 26)
(3) Physiological dependency	(a) Blood cotinine level	Pre-treatment (week 00)
(4) Self-efficacy	(a) Pre-treatment Confidence Questionnaire	Pre-treatment (week 00) 6-month assessment (week 26)
	(b) Self-efficacy Assessment	Pre-treatment (week 00) 6-month assessment (week 26)
(5) Social support	(a) Social Support Index	Pre-treatment (week 00)

weighted sums or are normatively weighted versus self rated for importance of event (Horowitz et al., 1979). See Appendix A for scale.

Daily Hassles Scale. The scale items for the Daily Hassles Scale (Kanner et al., 1981) were developed from indepth interviews with a sample of 100 middle age respondents. The scale is a checklist of 117 minor daily annoyances. The subject is asked to mark any of these events which felt like a hassle in the past week. The original scale yields two subscores: a frequency score of the number of hassles checked, and an intensity scale for the degree of hassle of each event occurring. In this study, the original scale was modified to include the recording of events that had occurred even if not considered to be a hassle. This modified score represented all events checked which may require attention or coping and affect smoking behavior even if not considered a hassle. A total average hassle score was computed by dividing the intensity score by the frequency score. A score representing the average impact of the events on the individual may be a more appropriate measure of nonspecific daily stressors than the simple count of events. Stress has many dimensions (e.g., intensity and frequency). It was not known which of these aspects would be related to smoking cessation efforts. Five daily hassle scale scores were used; Hassles Count Score, Non-hassles Score, Total Hassle Count Score, Hassle Intensity Score, and Total Hassle Score. It was felt that these five scores reflected the aspects of stress which were most relevant for this study. See Table 2 for method of computing each score. See Appendix B for scale.

Table 2
Method of Computing
Daily Hassles Scales

<u>Name</u>	<u>Score Calculated by</u>
1) Hassle Count Score	Count of events which occurred and were considered to be a hassle
2) Non-hassle Score	Count of number of events which occurred but were not considered to be a hassle
3) Total Hassle Count Score	Sum of the Hassle Count Score and the Non-hassle Score
4) Hassle Intensity Score	Sum of intensity ratings for all events which occurred including non-hassles, which were considered to be stressful.
5) Total Hassle Score	The Hassle Intensity Score divided by the Total Hassle Count Score

Ways of Coping Scale. The Ways of Coping Scale (Folkman & Lazarus, 1980) is a checklist of 68 items which describe a wide variety of thoughts and actions people use to deal with taxing events. The subjects think about a situation which had been stressful for them during the previous few months and checks Yes or No if the item was a coping strategy they used to deal with that event. The score is a count of the number of strategies used. Two subscales have been derived: the problem focus scale (P-scale) consisting of 24 items, and the emotional focus scale (E-scale) consisting of 40 items. Problem focus items include cognitive problem solving efforts and behavioral strategies for altering or managing sources of stress. The emotional focus scale includes cognitive and behavioral efforts directed at reducing or managing emotional distress. The mean r^2 between scales is .19 indicating that there is sufficient variance not shared between them to support their independent use. There is strong support for the conclusion that both focuses are used in almost all stressful encounters. In the same one year study of stress, emotion, and coping in which the Daily Hassles Scale was administered, the subjects also completed the Ways of Coping Scale after each interview. Of the 1332 stressful episodes reported, just one focus was used in less than 2% of these episodes (Folkman & Lazarus, 1980). Both the type of situation and appraisal of degree of ability to change the situation were found to affect coping strategies. One way analyses of variance revealed that significantly more problem-focused coping is used in work situations and mixed coping (problem and emotion focus) in health situations. Coping

consistency scores, defined as the combined proportion of problem and emotion focused coping used in a specific episode were calculated through a combinatorial analysis in which the number of pattern repetitions were calculated intraindividually (perfect consistency = 1, perfect variability = 0). Scores ranged from .073 to 1.00 with a mean of .265 indicating that there is more variability than consistency in patterns (Folkman & Lazarus, 1980). For this study, a count of the total number of strategies endorsed was used as the score. See Appendix C for scale.

Smokers Coping Scale. The Smokers Coping Scale (Brod, 1982) was developed for use in this study. It is modeled after the Ways of Coping Scale in both methodological design and theoretical perspective. It is a checklist of coping strategies smokers use while trying to quit smoking. The items were drawn from coping strategies listed by smokers in a previous cessation study. The subjects indicated which strategy they had used, whether the strategy was successful or not, and how often they used that strategy. The scale yields seven subscores: Coping Count Score, Successful Count Score, Unsuccessful Count Score, Coping Frequency Score, Successful Frequency Score, Unsuccessful Frequency Score, Total Coping Score. Coping, like stress, has many dimensions. It was not known which of these aspects would be most relevant for smoking cessation. Therefore, all seven coping scores were used for this study. The total smoker's coping score is derived by multiplying the total number of strategies used by the frequency of those strategies. The total

smoker's score represents the absolute number of coping behaviors engaged in regardless of the number of different types of strategies employed. See Table 3 for method of computing each score. See Appendix D for scale.

Self-Efficacy Measures. The Pre-Treatment Confidence Questionnaire (Condiotte & Lichtenstein, 1981) was developed to measure self-efficacy in smokers. It has been the standard measure of self-efficacy for smoking cessation studies. The scale consists of 47 specific situations which are rated by smokers on a scale of 0 to 100% on their confidence that they would be able to resist the urge to smoke in that situation (i.e., "when you feel bored"). Multiple correlations of scale scores (corrected for shrinkage) with success at quitting smoking were .57 for relapse and .69 for time from treatment end to relapse event (Condiotte & Lichtenstein, 1981).

The Self-Efficacy Assessment (Brod, 1981) was developed as a more precise measure of the concept of self-efficacy as originally proposed by Bandura. It was felt that because of the Pre-treatment Confidence Scale's format, it was a better measure of specific situation dependency rather than self-efficacy (Brod & Hall, Note 2). In addition, the Self-Efficacy Assessment is a shorter and more easily administered measure. The scale consists of 17 statements. The smokers rate each statement on a 5 point Likert-type scale, ranging from not at all to extremely, on how accurately the statement applies to them or how it reflects how they feel about themselves. An example of a statement is "How tense or uncomfortable do you feel when

Table 3
Method of Computing
Smoker's Coping Scales

<u>Name</u>	<u>Score Calculated by</u>
1) Coping Count Score	Count of number of all the different types of strategies used
2) Successful Count Score	Count of number of successfully used strategies
3) Unsuccessful Count Score	Count of number of unsuccessfully used strategies
4) Coping Frequency Score	Sum of usage frequency for all strategies used
5) Successful Frequency Score	Sum of usage frequency for successfully used strategies
6) Unsuccessful Frequency Score	Sum of usage frequency for unsuccessfully used strategies
7) Total Coping Score	The Coping Count Score multiplied by the Coping Frequency Score

you think about quitting?" Subscores are derived from summed ratings of statements within a component, weighted, when appropriate, by statements which rate degree of strength and or generality for those statements. For example, the rating for the statement which measures how many people the smoker knows who have tried to quit smoking is weighted by their rating of "How successful have they been" and "How like these people are you?" The Cronbach Alpha for the scale items is .73.

Both scales were used as each has been found significantly to predict success at quitting after formal cessation treatment (Brod & Hall, Note 2; Condiotte & Lichtenstein, 1981; Mermelstein, McIntyre, & Lichtenstein, 1980). In addition, the Self-Efficacy Assessment may prove to be a better measure of self efficacy as originally proposed by Bandura as it taps all four components of the efficacy expectation and items are not measures of situational dependency tendencies. For detailed criticism of the Pre-Treatment Confidence Questionnaire see Brod and Hall, Note 2. See Appendix E and F for scales.

Nicotine Intake. The blood level of cotinine was used as the measure of nicotine intake. Cotinine is a metabolite of nicotine which can be reliably measured by blood assay. The measurement was taken at a pre-treatment one hour laboratory session after a 8-12 hour cigarette fast in which all subjects were required to participate. Blood samples (10 ml) were collected in plastic tubes containing potassium oxalate (monohydrate) as an anticoagulant. Blood

cotinine levels were measured by gas liquid chromatography using a nitrogen-phosphorus flame ionization detector and 5-methyl cotinine as internal standard. The assay procedure and operating conditions of the Hewlett-Parkard Model 5880 gas chromatograph followed the method of Jacob (Jacob, Wilson & Benowitz, 1981). The method is sensitive to 5 ng/ml concentrations of cotinine.

Social Support. As with the concept of stress, social support can be conceptualized and measured as either a general (chronic) level of social support from a broad base of social surroundings, events and relationships, or specifically (acute) as support by a significant other for a specific behavior. In the social support and smoking cessation studies previously cited, social support has been conceptualized and measured within the context of smoking behavior. For example, Ockene et al. (1982) defined social support as the total number of group sessions that a subject's significant other attended. Mermelstein et al. (in press, a) developed their own instrument to measure experienced helpfulness received from spouse (or living partner). For the purpose of this study social support was also measured within a limited context. The Social Support Index, a newly developed scale (Rugg & Hall, Note 6), is a series of six questions which measures degree and extent of support for quitting smoking as well as smoking behavior of close acquaintances and spouse or living partner. It was developed for the larger treatment study from which this population is drawn. This study used this scale for the first time. See Appendix G for scale.

Outcome Measure. Smoking status was classified as a dichotomous variable (quitter versus non quitter). Absolute abstinence rather than percent reduction was used as the criteria. An issue in the coping literature is: What constitutes a successful coping outcome? Absolute abstinence was used in this study as this was the goal that subjects had implicitly defined as "success" when joining treatment. Smoking status was determined by self report at week 03 (end of treatment) and at week 26 (six-month follow-up). Biochemical data were collected at various times during the study. Subjects are more likely to be accurate in reporting their smoking status when they know, or think, that their responses can be verified (Lichtenstein, 1982). In addition, subjects had listed, at pre-treatment, a close acquaintance whom the study could contact to verify their status. It was felt that this check helped facilitate accurate reporting. This procedure has been used successfully by other investigators (Schmahl, Lichtenstein, & Harris, 1972).

CHAPTER FOUR

RESULTS

Sample Description

The subjects were 55 women and 56 men drawn from a larger treatment study. The mean age was 38 years, ranging from 24 to 56 years. The sample was predominantly Caucasian (86%), middle to upper-middle class (88%), single (52%) and had greater than a high school education (68%). See Table 4 for the sample description.

Treatment and Smoking Status

Chi-square analyses found no significant differences in smoking status at week 03 or at week 26 between treatment groups. Therefore, subjects were collapsed across treatments for the primary analyses.

Smoker's Coping Scale

The Smoker's Coping Scale was a new measure developed for this study. Reliability coefficients measured by Cronbach's Alpha, for the three administrations for the Coping Count Scale ranged from .8 to .9. Reliability coefficients for the Coping Frequency Scale also ranged from .8 to .9. See Table 5 for reliability coefficients at each administration. Concurrent validity was assessed by correlating the Total Coping Count score from the Ways of Coping Scale with the Coping Total Count Scale from the Smoker's Coping Scale. The scores were significantly related at week 00 ($p < .001$, $r = .30$), at week 03 ($p < .004$, $r = .31$) and at week 26 ($p < .04$, $r = .24$).

Table 4

Sample Description

<u>Age (N=109)</u>	Mean = 38	Standard Deviation = 7.45	
<u>Sex (N=111)</u>	Frequency		
Male	56		
Female	55		
<u>Social Class (N=109)*</u>	Frequency	Percent	
1 (upper)	6	5	
2	35	32	
3 (middle)	53	49	
4	14	13	
5 (low)	1	1	
<u>Occupation (N=111)*</u>			
Higher executives	7	6	
Business managers	32	29	
Administrative personnel	29	27	
Clerical sales workers	29	26	
skilled manual	3	3	
semi skilled	5	4	
unskilled, unemployed	6	5	
<u>Marital Status (N=109)</u>			
married	32	29	
separated	4	4	
divorced	14	13	
widowed	2	2	
single	57	52	
<u>Education (N=109)*</u>			
graduate professional	15	14	
standard college	60	54	
partial college	27	25	
high school	6	6	
partial high school	1	1	

* Calculated from Hollingshead and Redlich Scale (1958)

Table 5
Reliability Coefficients
for the Smoker's Coping Scale *

Coping Count Score	<u>week 00</u>	Coping Frequency Score
.93		.89
Coping Count Score	<u>week 03</u>	Coping Frequency Score
.94		.85
Coping Count Score	<u>week 26</u>	Coping Frequency Score
.98		.91

* calculated by Cronbach's Alpha

Hypothesis Testing

Hypothesis (1).

It was hypothesized that quitters would use more kinds of coping strategies and use these strategies more often than continued smokers. It was also hypothesized that this difference would occur before beginning treatment as well as during treatment. This hypothesis was partially supported.

The prototypical method of analysis was logistic regression² with the dichotomous dependent variable of smoking status (quitter versus continued smoker). A series of individual univariate logistic regressions were performed with each of the seven coping scores derived from the Smokers Coping Scale (see Table 3) and the Ways of Coping Scale entered separately. All regressions were repeated twice, first using smoking status at week 03 and then smoking status at week 26 as the dependent variable.

Pretreatment Coping. No significant differences were found between quitters and continued smokers for any of the seven week 00 smoker's coping scores or the Ways of Coping Scale at either week 03 or week 26 when smoking status was the dependent variable.

End of Treatment Coping. Both the Successful Frequency Scale at week 03 and the Unsuccessful Count Scale at week 03 significantly differentiated quitters from continued smokers when week 03 smoking status was the dependent variable. Quitters were found to use strategies they considered to be successful for them more often than did continued smokers ($p < .05$, chi-square = 3.57, df = 1). Continued

smokers were found to use significantly more different types of strategies they considered to be unsuccessful for them than quitters ($p < .05$, chi-square = 3.73, $df = 1$). No significant differences were found for the other five Smoker's Coping Scales or the Ways of Coping Scale at week 03 as the independent variable and week 26 smoking status as the dependent variable. In addition, no significant differences were found for any of the week 03 coping scales when week 26 smoking status was the dependent variable.

Hypothesis (2).

It was hypothesized that stressful events make it more difficult to quit smoking. This hypothesis was tentatively supported.

The prototypical method of analysis was logistic regression with the dichotomous dependent variable of smoking status (quitter versus continued smoker). A series of individual univariate logistic regressions were performed with each of the five stress scores derived from the Hassles Scale (see Table 2) and the Schedule of Recent Experience entered separately. All regressions were repeated twice, first using smoking status at week 03 and then smoking status at week 26 as the dependent variable.

Pre-treatment Stress. No significant differences were found when any of the five week 00 Hassle Scales or the week 00 Schedule of Recent Experience score was the independent variable and either week 03 or week 26 smoking status was the dependent variable. Although not reaching traditional significance levels, a trend was found when

the week 00 Schedule of Recent Experience and the week 00 Total Hassle Scale were entered together as a set with smoking status at week 26 as the dependent variable ($p < .07$, chi-square = 5.05, df=2).

Stress During Treatment. No significant differences were found when any of the five week 03 Hassle Scales was the independent variable and either week 03 or week 26 smoking status was the dependent variable.

Stress During Maintenance. In addition to the hypothesized relationship between stress during treatment and smoking status, the relationship between stress during maintenance and smoking status was also examined. No significant differences were found when any of the five week 26 Hassle Scales or the week 26 Schedule of Recent Experience was the independent variable and week 26 smoking status was the dependent variable. Although not reaching traditional significance levels, a trend was found when the week 26 Schedule of Recent Experience, the week 26 Total Hassles Scale and an interaction term were entered as independent variables in the same regression with smoking status 26 as the dependent variable ($p < .08$, chi-square = 6.51, df = 3).

Hypothesis (3).

It was hypothesized that smoking cessation is a stressful event and that quitters would report a greater number and intensity of everyday hassles. The evidence found was weak and could be supportive of the opposite conclusion.

No significant differences in the number of pre-treatment hassles reported were found between quitters and continued smokers. See Table 6 for means and standard deviations of the Hassle Count score for each administration. A significant difference in the mean number of hassles reported was found between the sample in this study and a comparative sample from the general population (Lazarus, 1981). Smokers who were about to enter treatment reported a greater number of hassles than the general population ($t=8.52$, $df=209$, $p<.0001$). T-tests on difference scores in the number of hassles reported from week 00 to week 03 showed a significant decrease for quitters at week 26 ($p <.0001$) but not for continued smokers. A significant increase in number of hassles reported from week 03 to week 26 was found for continued smokers ($p<.02$) but not for quitters. No significant differences were found between quitters and continued smokers in the magnitude of the difference between week 00 and week 03 or between week 03 and week 26.

Hypothesis (4).

It was hypothesized that social support, self-efficacy and initial nicotine intake would be mediators of stress and of coping on smoking cessation efforts. This hypothesis was not supported.

The prototypical model for analysis was multiple regression. Individual independent regressions were performed for each of the following week 00 measures: The Pre-treatment Confidence Scale, the Self-Efficacy Assessment, initial cotinine level, number of cigar-

Table 6
Means and Standard Deviations
of Daily Hassles Count Score

<u>week 00</u>		
	$\bar{X}$	S.D.
all smokers ¹	35.6	22.5
quitters - at week 26	36.0	23.4
continued smokers - ² at week 26	37.6	21.8
general population	20.6	15.1
<u>week 03</u>		
	$\bar{X}$	S.D.
all smokers	29.2	19.3
quitters - at week 26	29.5	22.7
continued smokers - at week 26	28.6	16.8
<u>week 26</u>		
	$\bar{X}$	S.D.
all smokers	29.2	19.3
quitters - at week 26	29.5	20.4
continued smokers - at week 26	34.5	22.0

¹All smokers means and standard deviations were calculated from the total sample. Only smokers who had a Hassle Count Score for each administration were included in the quitter and continued smoker statistics.

²Reported by Lazarus, 1981.

ettes smoked, and the Social Support Index as the independent variable. Each regression was repeated twelve times, using either each one of the seven week 03 Smoker's Coping Scales or each one of the five week 03 Hassles Scales as the dependent variable. See Table 7 for correlations between the proposed mediators.

Initial Nicotine. No significant effects were found when either initial cotinine or number of cigarettes smoked at week 00 was the independent variable or any of the hassles or coping scales was the dependent variable.

Self-Efficacy. No significant effects were found when either the Pre-treatment Confidence Questionnaire or the Self-Efficacy Assessment was the independent variable and any of the hassles or coping scales was the dependent variable.

Social Support. No significant effects were found when the Social Support Index was the independent variable and any of the hassles or coping scales were the dependent variable.

Mediators and Smoking Status. Individual, independent logistic regression with either one of the self-efficacy, initial nicotine or social support measures, as the independent variable, and week 03 smoking status as the dependent variable were performed. Each regression was repeated with week 26 smoking status as the dependent variable. A significant difference in the number of cigarettes smoked at week 00 was found between quitters and continued smokers when week 03 was the dependent variable ($p < .007$ chi-square = 7.21, df = 1). A non-significant trend was found when the dependent variable was smoking status at week 26 ($p < .08$, chi-square = 2.97, df

Table 7
Correlations of Mediators (week 00)

	(2)	(3)	(4)	(5)
(1) measure of nicotine metabolite	.43**	.15	.10	.11
(2) number of cigarettes smoked		.13	.06	.01
(3) Self-Efficacy Assessment			.28**	.07
(4) Pre-Treatment Confidence Questionnaire				.16
(5) Social Support Index				

** p < .01

= 1). Quitters smoked significantly fewer cigarettes before entering treatment than continued smokers at week 03. No significant differences were found when either the Pre-treatment Confidence Questionnaire, the Self-Efficacy Assessment or the Social Support Index was the independent variable and week 03 or week 26 smoking status was the dependent variable. The Pre-treatment Confidence Questionnaire, the Self-Efficacy Assessment and the Social Support Index were re-administered at week 26. Individual, independent logistic regressions with either the Pre-treatment Confidence Questionnaire, the Self-Efficacy Assessment or the Social Support Index as the independent variable and week 26 smoking status as the dependent variable were performed. Both measures of self-efficacy were found to be significantly related to smoking status with quitters having a higher self-efficacy score than continued smokers. For the Self-Efficacy Assessment, $p < .0001$, chi-square = 16.26, df = 1. For the Pre-Treatment Confidence Questionnaire, $p < .0001$, chi-square=39.13, df=1. No significant difference for the Social Support Index was found.

Exploratory Questions

Question (1).

Do quitters use different coping strategies during treatment than continued smokers? This question was answered negatively.

Frequency counts for the coping strategies used most often as reported on the Smoker's Coping scale, were performed. Three of the

five most frequently used strategies were the same for both quitters and continued smokers. In addition, the primary strategy used most often by both groups was the same one. See Table 8 for most often used coping strategies. Frequency counts for the strategies considered to be most successful were also performed. Eighty percent of the top five strategies used most often by quitters were strategies which this group considered to be used successfully. Twenty percent of the strategies used most often by continued smokers were strategies this group considered to be used successfully. See Table 9 for the strategies considered to be used most successfully. Six of these strategies were considered to be successfully used by both quitters and continued smokers. See Table 10 for these strategies.

Question (2).

Do reported levels of daily hassles or use of coping strategies change over the course of cessation treatment? The Total Count Coping Scale was found to differ significantly from pre-treatment to six month followup.

Individual, independent repeated measures analyses were performed for each of the twelve hassle and coping scales. Scores from administrations of the scales at week 00, week 03 and week 26 were used. Only subjects who had scores for all three administrations for any given scale were included in the analysis for that scale. The Total Count for the Smoker's Coping Scale was found to significantly differ over time between quitters and continued smokers ($p < .05$, $F =$

Table 8

Most Often Used Coping Strategies

<u>Quitters</u>		<u>Continued Smokers</u>	
<u>Strategy</u>	<u>% of quitters who used strategy often</u>	<u>Strategy</u>	<u>% of continued smokers who used strategy often</u>
1) Make cigarettes less available	60%	1) Make cigarettes less available	58%
2) Remind self that even one cigarette is dangerous	58%	2) Eat	58%
3) Remind self of negative aspects and/or physical costs of smoking	54%	3) Chew gum, lifesavers, candy	42%
4) Chew gum, lifesavers, candy	56%	4) Make myself have negative thoughts about smoking	42%
5) Make myself have negative thoughts about smoking	44%	5) Think of something other than smoking	33%

Most Successfully Used Coping Strategies

<u>Quitters</u>		<u>Continued Smokers</u>	
<u>Strategy</u>	<u>% of quitters who used strategy successfully</u>	<u>Strategy</u>	<u>% of continued smokers who used strategy successfully</u>
1) Remind self of negative aspects and and/or physical costs of smoking	77%	1) Make cigarettes less available	67%
2) Chew gum, lifesavers, candy	74%	2) Renew commitment to someone else not to smoke	67%
3) Think of something other than smoking	73%	3) Think of something other than smoking	58%
4) Remind self that even one cigarette is dangerous	73%	4) Keep my hands busy	58%
5) Remind self of how well I'm doing and how proud I am of myself and my efforts	73%	5) Just decide not to smoke and exert my will power or self-control	58%
6) Remind self about the effects of smoking on my family or others around me	73%	6) Remind self of how well I'm doing and how proud I am of myself and my effort	58%
7) Renew my commitment to myself not to smoke	72%	7) Talk myself out of it or wait out the urge	58%
8) Make cigarettes less available	71%	8) Do something physical, exercise, jog	58%
9) Talk myself out of it or wait out the urge	71%	9) Learn or use relaxation exercises, deep-breathing, self-hypnosis, meditation, or other stress management techniques	58%
10) Just decide not to smoke and exert my will power or self control	68%	10) Avoid getting bored - keep busy e.g. go to a movie	58%
		11) Renew my commitment to myself not to smoke	58%

Table 10

Most Successfully Used Coping Strategies
by Both Quitters and Continued Smokers

<u>Strategy</u>	<u>% of smokers who used strategy successfully</u>
1) Think of something other than smoking	73%
2) Remind self of how well I'm doing and how proud I am of myself and my effort	72%
3) Renew my commitment to myself not to smoke	72%
4) Make cigarettes less available	72%
5) Talk myself out of it or wait out the urge	71%
6) Just decide not to smoke and exert my will power or self-control	68%

3.0, $df=2$). Further analysis on the difference between the week 00 and week 03 Total Coping Count Scale found a significant decrease in the mean number of the Total Coping Count Scale for quitters ($p<.03$) but not for continued smokers. No significant differences were found for difference scores between week 03 and week 26 for either quitters or continued smokers.

Question (3).

What is the relationship between reported daily hassles and coping? The relationship was dependent upon when in the cessation process it is measured and how stress and coping were defined.

It could be expected that specific scales from the Smoker's Coping Scale and from the Daily Hassles Scale would correlate with each other. These scales are: the Coping Count Scale and the Hassle Count Scale, the Coping Frequency Scale and the Hassle Intensity Scale, and the Total Coping Scale and the Total Hassle Scale. Correlations between these pairs of scores were calculated at week 00, week 03 and week 26. At week 00 the Coping Count Scale and the Hassle Count Scale were significantly related to each other ($p<.002$) and the Coping Frequency Scale was significantly related to the Hassle Intensity Scale ($p<.001$). No significant relationship was found between the Total Coping Scale and the Total Hassle Scale. At week 03 the same relationships were found. The Coping Count Scale was significantly related to the Hassle Count Scale ($p<.03$), the Coping Frequency Scale was significantly related to the Hassle Intensity Scale ($p<.03$), and the Total Coping Scale was not related

to the Total Hassle Scale. At week 26 no significant relationships were found for any of the pairs. See Table 11 for correlations at each administration.

Table 11
Correlations of Stress and Coping Scales

	week 00	week 03	week 26
Coping Count Scale and Hassles Count Scale	.29**	.22*	.03
Coping Frequency Scale and Hassles Intensity Scale	.39**	.21*	.19
Total Coping Scale and Total Hassle Scale	.08	.01	.07

* $p < .05$

** $p < .01$

CHAPTER FIVE

DISCUSSION

Coping

Coping and Smoking

Level of stress remains constant over the cessation process and that this stress does not have a direct relationship to smoking status. However, what one does to handle, or cope, with this stress does seem to matter.

Quitters and continued smokers differ in the frequency of coping behaviors they used while trying to quit smoking. This difference is not due to how many different types of behavior they tried or the total frequency of how often they used these behaviors. It appears that both quitters and continued smokers use many different coping strategies and use them with similar frequency. The important difference is in how often they use coping behaviors they believe work for them. Quitters used their successful coping behaviors significantly more often than did continued smokers.

Two different explanations for this finding are possible. It may be that, as with stress, quitters, in retrospect, feel that anything they did while trying to quit was successful because the final outcome was successful. This feeling may color the recall of behaviors even if they were unsuccessful in coping with the stress of quitting at the time they were used. Or, it may be that there are certain behaviors

which are generally more successfully used when trying to quit. However, these same behaviors are engaged in more frequently by quitters.

As expected, strategies used were a mixture of both problem-focused and emotional focused strategies (Folkman & Lazarus, 1980). In addition, either cognitive or behavioral kinds of efforts stood out as being used more often or more successfully by either group. Closer examination revealed that the strategy used most often was the same for both quitters and continued smokers (make cigarettes less available). However, the first two strategies used most successfully by quitters were not the same as those for continued smokers (see Table 9). It remains to be seen if, in future studies, other quitters also use these same strategies more successfully.

Coping Over Time

Only the total number of coping strategies used fluctuated from pre-treatment to six month followup. All other measures of coping remained constant. Closer examination showed that the shift in number of coping behaviors reported was due to a decrease in the number of behaviors for the period from pre-treatment to end of treatment only for quitters.

The reported use of coping behaviors before treatment, as measured by the Smoker's Coping Scale, was in reality a measure of expectation of coping attempts rather than of behaviors actually engaged in. Quitters and continued smokers did not differ in their pre-treatment coping expectations. However, this initial expectation

may be unrealistically high. Quitters may be more realistic in the number of different coping behaviors they actually use once in treatment. This would account for their decrease in the number of strategies used by quitters.

Follow-up in this study may also have been too long after treatment to accurately assess coping behavior. By six months, smokers who have already relapsed are not likely to be actively using quitting related coping strategies. Quitters, by this time, have likely become reasonably comfortable with their ex-smoker status and their urges to smoke greatly diminished. As a result, coping behavior by six months is not crucial for either group. Future studies might consider measuring coping, as well as stress, at a three-month follow-up.

New Measures of Coping

The Smoker's Coping Scale was developed for this study. The Smoker's Coping Scale is a checklist of behaviors. As such, it is a list of things smokers do when trying to quit smoking. Coping has been operationalized to mean specific, discrete and definable thoughts or actions. The Smoker's Coping Scale records which of these thoughts or actions smokers engage in and how often they do so. The scale was found to be highly reliable at each administration.

Stress

Stress and Smoking

A combination of both pre-treatment major life events and pre-treatment minor daily hassles showed a trend in differentiating quitters from continued smokers. Neither the Schedule of Recent Experience or the Daily Hassles Scale alone showed this trend. This suggests that the general background level of stress a smoker is experiencing before starting treatment may be more important in determining smoking status than the daily stresses experienced while in treatment or during maintenance. The idea that a generalized level of stress, comprised of both major life events and minor daily hassles, is important in predicting smoking status, is further supported by the similar trend found for week 26 stress and week 26 smoking status. This trend should be given weight because of statistical considerations. At end of treatment there was a highly unbalanced split in classification of the dependent variable (smoking status). As a result, power was decreased and it was more unlikely that statistical significance would be reached. A seemingly large number of logistic regressions were performed for the analyses concerning stress and coping. However, more significant or near significant results were found than would be expected by chance at a probability level of .05.

Minor daily stress alone, during treatment or during maintenance, did not predict status. No significant differences in either the week 00, week 03 or week 26 mean number of hassles between quitters and

continued smokers were found. The effects of stress may be felt or exhibited in many different areas. For example, a smoker with a high level of daily stress may be more irritable than one with a low level. This irritability may be related to feelings about quitting but not related to success at quitting.

The question remains whether the occurrence of major life stress during treatment is related to smoking status. The Schedule of Recent Life Experience administered at week 26 did not predict status at either week 03 or week 26. However, the scale measures major life events in the past six months. This six-month period covers both treatment and maintenance. Stress may have a differential effect at different phases of the cessation process. For example, the stress of car problems while in treatment, when ex-smoking status is still tenuous, may lead the individual to resume smoking. However, once having ended treatment, the same situation may be viewed as a challenge and serve to reinforce non-smoking status.

The Stress of Smoking Cessation

The number of daily hassles reported for all smokers going through treatment did not significantly change from pre-treatment to end of treatment. If cessation was stressful, an increase would have been found.

The baseline number of hassles reported were significantly greater than general population means. Smokers have been found to be more anxious than the general population. The effect of this high level of anxiety may result in minor daily events being more readily

perceived as hassles. It may also be that the stress of cessation is evident even before the actual treatment begins. Stress may be perceived beginning with the knowledge of imminent participation in treatment.

It is doubtful that this high level of baseline stress is unique to smokers. It may be more representative of generally higher anxiety in any treatment-seeking population or in individuals (smokers and non-smokers) about to undergo behavior efforts. If this is true, one would expect to find that the mean number of daily hassles reported at a one year follow-up would be significantly lower and closer to general population means.

Stress Over Time

The level of daily stress does not appear to fluctuate over the entire course of the smoking cessation process. However, an interesting finding appears when mean number of daily hassles over time are compared for quitters and continued smokers between pre-treatment and end of treatment or between end of treatment and six-month follow-up. Quitters report a significant decrease in the number of daily hassles from pre-treatment to end of treatment, whereas continued smokers report an increase in these same hassles from end of treatment to followup. Previous results have also shown that the greater the reduction in the number of cigarettes smoked, the less the mood disturbance (Hall, Bachman, Henderson, Barstow, & Jones, 1983). Several explanations for the decrease in stress for quitters are possible.

1. It may be that there is actually a decrease in daily levels of stress during treatment for some smokers and that this decrease facilitates quitting behavior.
2. By quitting, smokers reduce their initially high (and possibly situationally inflated) baseline level of stress due to preparatory anxiety. This initially high level would not decrease if the smoker was unsuccessful in his or her attempt to quit.
3. It may also be that, in retrospect, quitters report less stress during quitting because of feeling "good" about their success. These positive feelings may act to weaken the memory or recall of daily events which were perceived as hassles at the time they occurred. The increase in daily stress reported by continued smokers between end of treatment and followup may be the result of a negative halo effect. Smokers who were not able to quit after treatment may feel bad about their failure. These negative feelings may lead to increased irritability or other feelings which make ordinary daily events seem more like hassles.
4. Continued smokers, in retrospect, may attempt to justify or explain their failure by remembering the time to be filled with a lot of daily stress which prevented them from quitting.

The time of greatest relapse has been found to occur around two to three weeks post-treatment. For this study, follow-up was at six months. By this time, it is very likely that both the number and

intensity of stresses related to quitting attempts would have greatly diminished. This is supported by the finding that, at six-month followup, the relationship between stress and coping, which existed at the end of treatment, was no longer found. A more appropriate time to measure stress may be at a three-month follow-up. This would give more information on what is occurring closer to the time of greatest relapse.

Mediators

Social support, initial nicotine intake and self-efficacy have all been found to be related to smoking status. It was hypothesized that stress and coping were also related to smoking status. These connections were extended to hypothesize that these mediators were related to stress and coping. It is disappointing that this was not found to be true. There are many avenues by which a mediating factor can influence final outcome. It may be that stress and coping are not the paths that social support, initial nicotine intake, or self-efficacy take to influence smoking status.

The relationship of these mediators to smoking status was also examined. Only the number of cigarettes smoked before beginning treatment was predictive. These other negative findings are also surprising in light of the considerable findings to the contrary. However, on closer examination, some explanations are possible.

Initial Nicotine.

The measure of nicotine used, due to a methodological procedure necessary for a related research project was probably not an accurate reflection of nicotine dependency. Blood cotinine was assessed at a laboratory session after a twelve-hour cigarette fast. As a result, this measure did not represent levels of cotinine which would be present under normal smoking conditions.

The frequent smoker smokes more often and in more situations than the light smoker. This means that, for the heavy smoker, smoking is associated with many more different types of stressful events. As a result, smoking may represent a primary coping strategy. Giving up this central coping behavior would be more difficult for the heavy than the light smoker. The finding that the number of pre-treatment cigarettes smoked, but not the initial level of nicotine intake predicts smoking status, supports this conclusion.

Self-Efficacy.

Neither self-efficacy measures predicted smoking status. This negative finding is a replication of similar results from a previous study using the Pre-treatment Confidence Questionnaire conducted with an almost identical sample in 1981 (Brod & Hall, Note 3). These two samples appear to be comparable to those of other studies looking at self-efficacy in smokers which found positive relationships (Conditte & Lichtenstein, 1981; DiClemente, 1981). However, one is left wondering if some yet unmeasured sample characteristic in this population

accounts for the findings. At present, no other reasonable explanation can be offered.

Social Support.

Social support was measured at pre-treatment. As such, the score represents a measure of expectancy rather than of actual support received. It may be that, as with coping, expectations are not closely tied to reality. This would explain why expectations of support did not predict the reality of success or failure of cessation efforts. Also, closer examination of this population revealed that only 32 people were married. This leaves 79% of the sample who were possibly living alone. It is impossible to know if significant others, who would be a source of support, were available for this group. Future studies might look at support only for those smokers who have an available significant other. In addition, validity and reliability for the Social Support Index should be determined.

Implications for Treatment

A question which is often asked in the smoking field is "Are there good times or bad times to try and quit smoking?" This study only begins to answer this question. It appears that a combination of many major life events and minor daily hassles right before cessation efforts begin may be one strike against the smoker. A measure of this

background stress may provide smoking cessation interventionists with a helpful screening tool.

Intervention efforts have often heavily focused on applying cessation techniques to groups of smokers without regard for individual differences. The frequent use of coping behaviors which the smoker felt was successful for him or herself made a crucial difference for smoking status. This suggests that, during treatment, smokers should be helped to assess which coping behaviors they believe are working for them and encouraged to focus their efforts toward frequent use of those behaviors. Further studies may find that the strategies considered to be successfully used by this population are the same for other samples. If so, treatment should include an emphasis on the teaching of these behaviors.

Coping was found to be related to smoking status at the end of treatment but not to status at six month follow-up. Pre-treatment self-efficacy was not found to be related to status at either end of treatment or at follow-up. However, self-efficacy, measured at followup, was strongly related to smoking status at six months. It has been proposed that smoking cessation is a process with two distinct phases: quitting and maintenance (Marlatt, 1979). Factors which may be important to one phase are not necessarily relevant to the other. These findings support this idea and suggest factors which are related to the different components of the process. It appears that, while in treatment, coping is relevant for quitting behavior, whereas, cognitive factors (specifically, self-efficacy) play a greater role in maintenance. Improved quit rates at follow-up may

result if more emphasis during the treatment phase is placed on the development of maintenance skills. Exercises to improve one's self-efficacy may be one focus for skills training.

Conclusions

It appears that the level of stress smokers experience during this process remains fairly constant and that it does not have a direct relationship to quitting. If anything, being successful in one's attempt to quit smoking may actually help to reduce stress. However, what one does to handle stress does seem to matter. Coping, specifically successful coping, may be an important mediator in the relationship between stress and smoking status. It is not surprising to find that quitters use more strategies they consider to be successful and that continued smokers use strategies viewed as unsuccessful. What is surprising is that the frequency of coping efforts is not also important. It appears that quality, not quantity, is a key aspect. Also surprising is that mediators, which have been found to have an impact on smoking status, do not seem to have the same effect on perceptions of stress or on coping efforts.

This study raises many questions. The findings strongly suggest the need for future studies. Some remaining important questions still to be addressed are:

1. Is there consistency in the coping strategies used by different groups of quitters?

2. If so, will teaching these strategies during treatment improve quit rates?
3. Is there a differential effect of stress at different phases of the cessation process?
4. Is there a synergistic effect between major life experience stress and minor daily hassles, or between acute and chronic stress?
5. What is the optimal follow-up time to assess cessation stress and coping behavior?
6. Will other measures of social support or analyses using only specific populations (e.g., married) find that social support is an important mediator?
7. Are there other variables, other than those in this study, which should be considered as mediators?

Little has been known previously about the role of stress and coping in the smoking cessation process. This study has only begun to shed some light on the topic. At this time it can be concluded that both stress and coping play important roles in the cessation process and should be included as variables of interest in future smoking studies.

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FOOTNOTES

1. Due to administrative error, ten subjects' followup data were collected at week 30, and ten at week 34.
2. This procedure fits the multiple regression model to a single binary dependent variable.

Appendix A

The Schedule of Recent Experience Scale

SCHEDULE OF RECENT & ANTICIPATED EXPERIENCES

CHECK ALL ITEMS THAT APPLY

- A) If any of these life events have happened to you in the last 6 mos., mark choice P in the column headed PAST.
- B) If you expect the event to happen to you in the next 6 mos., mark the choice F in the column headed FUTURE.
- C) If you mark both P and F, then answer the next part in terms of the one you think about most.
- D) Then mark how much you think about it now: 1) a lot 2) some 3) not at all

3) not at all		1	2	3
1. Vacation	P F	1	2	3
2. Minor violations of the law	P F	1	2	3
3. Christmas	P F	1	2	3
4. Death of a spouse or lover	P F	1	2	3
5. Divorce	P F	1	2	3
6. Marital separation or separation from lover	P F	1	2	3
7. Jail term	P F	1	2	3
8. Death of close family member	P F	1	2	3
9. Major personal injury or illness	P F	1	2	3
10. Marriage	P F	1	2	3
11. Fired at work	P F	1	2	3
12. Marital reconciliation or reconciliation with lover	P F	1	2	3
13. Retirement	P F	1	2	3
14. Change in health of family member (not self)	P F	1	2	3
15. Pregnancy	P F	1	2	3
16. Sex difficulties	P F	1	2	3
17. Gain of new family members	P F	1	2	3
18. Business readjustment	P F	1	2	3
19. Change in financial state	P F	1	2	3
20. Death of close friend	P F	1	2	3
21. Change to different occupation	P F	1	2	3
22. Change in number of arguments with spouse or lover	P F	1	2	3
23. Mortgage over \$10,000	P F	1	2	3
24. Foreclosure of mortgage or loan	P F	1	2	3
25. Change in responsibilities at work	P F	1	2	3
26. Son or daughter leaving home	P F	1	2	3
27. Trouble with in-laws	P F	1	2	3
28. Outstanding personal achievement	P F	1	2	3
29. Spouse begins or stops work	P F	1	2	3
30. Begin or end of school	P F	1	2	3
31. Change in living conditions	P F	1	2	3
32. Change in personal habits (self or family)	P F	1	2	3
33. Trouble with boss	P F	1	2	3
34. Change in work hours or conditions	P F	1	2	3
35. Change in residence	P F	1	2	3
36. Change in schools	P F	1	2	3
37. Change in recreation	P F	1	2	3
38. Change in church activities	P F	1	2	3
39. Change in social activities	P F	1	2	3
40. Mortgage or loan less than \$10,000	P F	1	2	3
41. Change in sleeping habits	P F	1	2	3
42. Change in number of family get-togethers	P F	1	2	3
43. Change in eating habits	P F	1	2	3

Appendix B
The Daily Hassles Scale

PLEASE NOTE:

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These consist of pages:

88-91

93-95

99-102

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THE HASSLES SCALE

Directions: Hassles are irritants that can range from minor pressures, problems, or difficulties. They can occur few or many times.

The following are situations in which a person can feel hassled. Look at the numbers on the right and indicate by marking 2, 3, or 4 how SEVERE each of the hassles has been for you in the past month. If the event occurred, but you did not consider it a hassle, mark choice 1.

- SEVERITY: 1) occurred but not considered a hassle
2) somewhat severe
3) moderately severe
4) extremely severe

IF EVENT DID NOT OCCUR FOR YOU IN PAST MONTH, LEAVE IT BLANK!!

	Event occurred, but do not consider a hassle	Somewhat severe	Moderately severe	Extremely severe
1. Misplacing or losing things	1	2	3	4
2. Troublesome neighbors	1	2	3	4
3. Social obligations	1	2	3	4
4. Inconsiderate smokers	1	2	3	4
5. Troubling thoughts about your future	1	2	3	4
6. Thoughts about death	1	2	3	4
7. Health of a family member	1	2	3	4
8. Not enough money for clothing	1	2	3	4
9. Not enough money for housing	1	2	3	4
10. Concerns about owing money	1	2	3	4
11. Concerns about getting credit	1	2	3	4
12. Concerns about money for emergencies	1	2	3	4
13. Someone owes you money	1	2	3	4
14. Financial responsibility for someone who doesn't live with you.	1	2	3	4
15. Cutting down on electricity, water, etc.	1	2	3	4
16. Smoking too much	1	2	3	4
17. Use of alcohol	1	2	3	4
18. Personal use of drugs	1	2	3	4
19. Too many responsibilities	1	2	3	4
20. Decisions about having children	1	2	3	4
21. Non-family members living in your house	1	2	3	4
22. Care for pet	1	2	3	4
23. Planning meals	1	2	3	4
24. Concerned about the meaning of life	1	2	3	4
25. Trouble relaxing	1	2	3	4
26. Trouble making decisions	1	2	3	4
27. Problems getting along with fellow workers	1	2	3	4
28. Customers or clients give you a hard time	1	2	3	4
29. Home maintenance (inside)	1	2	3	4
30. Concerns about job security	1	2	3	4
31. Concerns about retirement	1	2	3	4
32. Laid-off or out of work	1	2	3	4
33. Don't like current work duties	1	2	3	4

	Occurred, but no hassle	1	2	Somewhat severe	3	Moderately severe	4	Extremely severe
34. Don't like fellow workers_____	1		2	3	4			
35. Not enough money for basic necessities_____	1	2	3	4				
36. Not enough money for food_____	1	2	3	4				
37. Too many interruptions_____	1	2	3	4				
38. Unexpected company_____	1	2	3	4				
39. Too much time on hands_____	1	2	3	4				
40. Having to wait_____	1	2	3	4				
41. Concerns about accidents_____	1	2	3	4				
42. Being lonely_____	1	2	3	4				
43. Not enough money for health care_____	1	2	3	4				
44. Fear of confrontation_____	1	2	3	4				
45. Financial security_____	1	2	3	4				
46. Silly practical mistakes_____	1	2	3	4				
47. Inability to express oneself_____	1	2	3	4				
48. Physical illness_____	1	2	3	4				
49. Side effects of medication_____	1	2	3	4				
50. Concerns about medical treatment_____	1	2	3	4				
51. Physical appearance_____	1	2	3	4				
52. Fear of rejection_____	1	2	3	4				
53. Difficulties with getting pregnant_____	1	2	3	4				
54. Sexual problems that result from physical problems_____	1	2	3	4				
55. Sexual problems other than those resulting from physical problems_____	1	2	3	4				
56. Concerns about health in general_____	1	2	3	4				
57. Not seeing enough people_____	1	2	3	4				
58. Friends or relatives too far away_____	1	2	3	4				
59. Preparing meals_____	1	2	3	4				
60. Wasting time_____	1	2	3	4				
61. Auto maintenance_____	1	2	3	4				
62. Filling out forms_____	1	2	3	4				
63. Neighborhood deterioration_____	1	2	3	4				
64. Financing children's education_____	1	2	3	4				
65. Problems with employees_____	1	2	3	4				
66. Problems on job due to being a woman or man_____	1	2	3	4				
67. Declining physical abilities_____	1	2	3	4				
68. Being exploited_____	1	2	3	4				
69. Concerns about bodily functions_____	1	2	3	4				
70. Rising prices of common goods_____	1	2	3	4				
71. Not getting enough rest_____	1	2	3	4				
72. Not getting enough sleep_____	1	2	3	4				
73. Problems with aging parents_____	1	2	3	4				
74. Problems with your children_____	1	2	3	4				
75. Problems with persons younger than yourself_____	1	2	3	4				
76. Problems with your lover_____	1	2	3	4				

	Occurred, but no hassle	Somewhat severe	Moderately severe	Extremely severe
77. Difficulties seeing or hearing_____	1	2	3	4
78. Overloaded with family responsibilities_____	1	2	3	4
79. Too many things to do_____	1	2	3	4
80. Unchallenging work_____	1	2	3	4
81. Concerns about meeting high standards_____	1	2	3	4
82. Financial dealings with friends or acquaintances_____	1	2	3	4
83. Job dissatisfactions_____	1	2	3	4
84. Worries about decisions to change jobs_____	1	2	3	4
85. Trouble with reading, writing, or spelling abilities_____	1	2	3	4
86. Too many meetings_____	1	2	3	4
87. Problems with divorce or separation_____	1	2	3	4
88. Trouble with arithmetic skills_____	1	2	3	4
89. Gossip_____	1	2	3	4
90. Legal problems_____	1	2	3	4
91. Concerns about weight_____	1	2	3	4
92. Not enough time to do the things you need to do_____	1	2	3	4
93. Television_____	1	2	3	4
94. Not enough personal energy_____	1	2	3	4
95. Concerns about inner conflicts_____	1	2	3	4
96. Feel conflicted over what to do_____	1	2	3	4
97. Regrets over past decisions_____	1	2	3	4
98. Menstrual (period) problems_____	1	2	3	4
99. The weather_____	1	2	3	4
100. Nightmares_____	1	2	3	4
101. Concerns about getting ahead_____	1	2	3	4
102. Hassles from boss or supervisor_____	1	2	3	4
103. Difficulties with friends_____	1	2	3	4
104. Not enough time for family_____	1	2	3	4
105. Transportation problems_____	1	2	3	4
106. Not enough money for transportation_____	1	2	3	4
107. Not enough money for entertainment and recreation_____	1	2	3	4
108. Shopping_____	1	2	3	4
109. Prejudice and discrimination from others_____	1	2	3	4
110. Property, investments or taxes_____	1	2	3	4
111. Not enough time for entertainment and recreation_____	1	2	3	4
112. Yardwork or outside home maintenance_____	1	2	3	4

113. Concerns about news events _____
 114. Noise _____
 115. Crime _____
 116. Traffic _____
 117. Pollution _____

Occurred, but no hassle	Somewhat severe	Moderately severe	Extremely severe
1	2	3	4
1	2	3	4
1	2	3	4
1	2	3	4
1	2	3	4

HAVE WE MISSED ANY OF YOUR HASSLES?

IF SO WRITE THEM IN BELOW:

118. _____

119. _____

1	2	3	4
1	2	3	4

ONE MORE THING: HAS THERE BEEN A CHANGE IN YOUR
 LIFE THIS MONTH THAT AFFECTED HOW YOU ANSWERED
 THIS SCALE? IF SO, TELL US WHAT IT WAS:

* * * * *
 * * * * *
 *

Appendix C
The Ways of Coping Scale

**** WAYS OF COPING ****

Please take a few moments and think about the event or situation that has been the most stressful for you during the past few months. By "stressful" we mean a situation which was difficult or troubling to you, either because it made you feel bad or because it took effort to deal with it. It might have been something to do with your family, with your job, or with your friends.

Then, thinking about this event or situation, please read each of the "ways of coping". Then mark 1) YES or 2) NO for each item depending on whether that item applies to you.

To help keep the event or situation clearly in mind there is space provided below if you want to jot down some details, such as the place, who was involved, what you did or why it was important.

(To help keep the situation in mind): I am talking about the situation in which _____

1. Just concentrated on what you had to do next -- the next step.
2. You went over the problem again and again in your mind to try to understand it.
3. Turned to work or substitute activity to take your mind off things.
4. You felt that time would make a difference, the only thing to do was to wait.
5. Bargained or compromised to get something positive from the situation.
6. Did something which you thought wouldn't work, but at least you were doing something.
7. Got the person responsible to change his or her mind.
8. Talked to someone to find out more about the situation.
9. Blamed yourself.
10. Concentrated on something good that could come out of the whole thing.
11. Criticized or lectured yourself.
12. Tried not to burn your bridges behind you, but leave things open somewhat.
13. Hoped a miracle would happen.
14. Went along with fate; sometimes you just have had luck.
15. Went on as if nothing had happened.
16. Felt bad that you couldn't avoid the problem.
17. Kept your feelings to yourself.
18. Looked for the "silver lining", so to speak; tried to look on the bright side of things.

YES
1

NO
2

1

2

1

2

1

2

1

2

1

2

1

2

1

2

1

2

1

2

1

2

1

2

1

2

1

2

1

2

1

2

1

2

1

2

	YES	NO
19. Slept more than usual.	1	2
20. Got mad at the people or things that caused the problem.	1	2
21. Accepted sympathy and understanding from someone.	1	2
22. Told yourself things that helped you to feel better.	1	2
23. You were inspired to do something creative.	1	2
24. Tried to forget the whole thing.	1	2
25. Got professional help and did what they recommended.	1	2
26. Changed or grew as a person in a good way.	1	2
27. Waited to see what would happen.	1	2
28. Did something totally new that you never would have done if this hadn't happened.	1	2
29. Tried to make up to someone for the bad thing that happened.	1	2
30. Made a plan of action and followed it.	1	2
31. Accepted the next best thing to what you wanted.	1	2
32. Let your feelings out somehow.	1	2
33. Realized you brought the problem on yourself.	1	2
34. Came out of the experience better than when you went in.	1	2
35. Talked to someone who could do something concrete about the problem.	1	2
36. Got away from it for a while; tried to rest or take a vacation.	1	2
37. Tried to make yourself feel better by eating, drinking, smoking, taking medication, etc.	1	2
38. Took a big chance or did something very risky.	1	2
39. Found new faith or some important truth about life.	1	2
40. Tried not to act too hastily or follow your first hunch.	1	2
41. Joked about it.	1	2
42. Maintained your pride and kept a stiff upper lip.	1	2
43. Rediscovered what is important in life.	1	2
44. Changed something so things would turn out all right.	1	2
45. Avoided being with people in general.	1	2
46. Didn't let it get to you; refused to think too much about it.	1	2
47. Asked someone you respected for advice and followed it.	1	2
48. Kept others from knowing how bad things were.	1	2
49. Made light out of the situation; refused to get too serious about it.	1	2
50. Talked to someone about how you were feeling.	1	2
51. Stood your ground and fought for what you wanted.	1	2
52. Took it out on other people.	1	2
53. Drew on your past experiences; you were in a similar situation before.	1	2
54. Just took things one step at a time.	1	2
55. You knew what had to be done, so you doubled your efforts and tried harder to make things work.	1	2

Appendix D
The Smoker's Coping Scale

Below is a list of different coping strategies people often use when trying to resist the urge to smoke while quitting.

2. In columns 1, 2, and 3 mark how often you have used that strategy in the past week.
- 1) Rarely
2) Sometimes
3) Frequently

1. Think of something other than smoking.
2. Keep my hands busy.
3. Visualize or think of self as an ex-smoker.
4. Avoid stressful situations.
5. Make cigarettes less available.
6. Remind self that even one cigarette is dangerous.
7. Remind self of negative aspects and/or physical costs of smoking.
8. Avoid situations where I would feel tempted to smoke.
9. Just decide not to smoke and exert my will power or self-control.
10. Chew gum, lifesavers, candy.
11. Remind self of financial costs of smoking.
12. Remind self of how well I'm doing and how proud I am of myself and my effort.
13. Eat
14. Read
15. Talk myself out of it or wait out the urge.
16. Avoid other smokers.
17. Do something physical, exercise, jog.
18. Learn or use relaxation exercises, deep breathing, self-hypnosis, meditation, or other stress management techniques.
19. Remove or avoid all smoking cues (ashtrays, matches).
20. Be around non-smokers.
21. Drink non-alcoholic beverages (water, juice, coffee).
22. Set-up rewards for not smoking.
23. Avoid drugs which lower my inhibitions or weaken my self-control (marijuana, alcohol).
24. Avoid coffee.

[illegible]

	Unsuccessful	Successful	Rarely	Sometimes	Frequently
25. Make quitting a challenge or test of self.	U	S	1	2	3
26. Read or reread information on smoking.	U	S	1	2	3
27. Take drugs or alcohol to relax.	U	S	1	2	3
28. Think about and/or self-reflect about smoking.	U	S	1	2	3
29. Seek new activities or perform old activities in a new way.	U	S	1	2	3
30. Call a friend or person supporting my not smoking.	U	S	1	2	3
31. Avoid getting bored--keep busy, e.g., go to a movie.	U	S	1	2	3
32. Remind self about the effects of smoking on my family or others around me.	U	S	1	2	3
33. Get out in the fresh air.	U	S	1	2	3
34. Renew my commitment to myself not to smoke.	U	S	1	2	3
35. Do something which is incompatible with smoking (take a shower, brush teeth).	U	S	1	2	3
36. Remind myself of the benefits of not smoking.	U	S	1	2	3
37. Renew commitment to someone else not to smoke.	U	S	1	2	3
38. Be in an environment where smoking is not allowed.	U	S	1	2	3
39. Sleep	U	S	1	2	3
40. Talk about not being a smoker anymore or what quitting is like.	U	S	1	2	3
41. Make self have negative thoughts about smoking.	U	S	1	2	3
42. Recall videotape image of self during rapid smoking.	U	S	1	2	3
43. Chew nicotine chewing gum.	U	S	1	2	3
44. Other _____	U	S	1	2	3

Appendix E

The Pre-Treatment Confidence Questionnaire

* * * * *

CONFIDENCE SCALE

Most smokers experience some degree of difficulty with urges to smoke in certain situations when they are trying to quit smoking. Below is a list of some of these situations. Please read each one carefully and imagine how you would feel in that situation if you were trying to quit smoking without treatment in our clinic.

Mark the number that corresponds to "How confident you are that you would be able to resist giving into the urge to smoke in the following situations".

- 1) not at all confident
- 2) somewhat confident
- 3) moderately confident
- 4) very confident
- 5) extremely confident

1. When you feel really happy.

2. When you feel anxious.

3. When you want to sit back and enjoy a cigarette.

4. When you have finished a meal or snack.

5. When you want to keep yourself busy.

6. When you are nervous.

7. When you want to feel more attractive.

8. When you feel annoyed.

9. When you want to relax.

10. When you simply become aware of the fact that you are not smoking.

11. When you are trying to pass time.

	Not at all 1	Somewhat 2	Moderately 3	Very 4	Extremely 5
1. When you feel really happy.	1	2	3	4	5
2. When you feel anxious.	1	2	3	4	5
3. When you want to sit back and enjoy a cigarette.	1	2	3	4	5
4. When you have finished a meal or snack.	1	2	3	4	5
5. When you want to keep yourself busy.	1	2	3	4	5
6. When you are nervous.	1	2	3	4	5
7. When you want to feel more attractive.	1	2	3	4	5
8. When you feel annoyed.	1	2	3	4	5
9. When you want to relax.	1	2	3	4	5
10. When you simply become aware of the fact that you are not smoking.	1	2	3	4	5
11. When you are trying to pass time.	1	2	3	4	5

12. When you are worried.

Not at all	Somewhat	Moderately	Very	Extremely
1	2	3	4	5

13. When you are in a situation in which you feel smoking is a part of your self-image.

1	2	3	4	5
---	---	---	---	---

14. When you feel angry.

1	2	3	4	5
---	---	---	---	---

15. When you feel tired.

1	2	3	4	5
---	---	---	---	---

16. When you feel embarrassed.

1	2	3	4	5
---	---	---	---	---

17. When you feel bored.

1	2	3	4	5
---	---	---	---	---

18. When you want to have time to think in a conversation.

1	2	3	4	5
---	---	---	---	---

19. When you feel restless.

1	2	3	4	5
---	---	---	---	---

20. When you want something to do with your hands.

1	2	3	4	5
---	---	---	---	---

21. When you want to concentrate.

1	2	3	4	5
---	---	---	---	---

22. When you want something in your mouth.

1	2	3	4	5
---	---	---	---	---

23. When you want to keep yourself busy.

1	2	3	4	5
---	---	---	---	---

24. When you feel tense.

1	2	3	4	5
---	---	---	---	---

25. When you feel you need more energy.

1	2	3	4	5
---	---	---	---	---

26. When you are resting.

1	2	3	4	5
---	---	---	---	---

27. When you are drinking an alcoholic beverage.

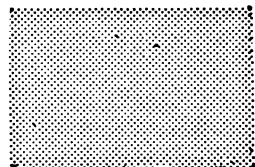
1	2	3	4	5
---	---	---	---	---

28. When you feel oversensitive.

1	2	3	4	5
---	---	---	---	---

29. When you see others smoking.

1	2	3	4	5
---	---	---	---	---



	Not at all	Somewhat	Moderately	Very	Extremely
	1	2	3	4	5
30. When you feel impatient.	1	2	3	4	5
31. When you want to reward yourself for something you've done.	1	2	3	4	5
32. When someone offers you a cigarette.	1	2	3	4	5
33. When you are waiting for someone or something.	1	2	3	4	5
34. When you feel uncomfortable.	1	2	3	4	5
35. When you want to cheer up.	1	2	3	4	5
36. When you want to avoid eating sweets.	1	2	3	4	5
37. When you feel depressed.	1	2	3	4	5
38. When you want to feel more mature and sophisticated.	1	2	3	4	5
39. When you want to take a break from work or some other activity.	1	2	3	4	5
40. When you want to keep slim.	1	2	3	4	5
41. When you are overly excited.	1	2	3	4	5
42. When you feel upset.	1	2	3	4	5
43. When you light up a cigarette to go along with some activity you are doing (for example; while fixing a bicycle, writing a letter, doing housework, etc.).	1	2	3	4	5
44. When you are drinking coffee or tea.	1	2	3	4	5
45. When you feel frustrated.	1	2	3	4	5
46. When you are angry with yourself.	1	2	3	4	5
47. At any time in the future, regardless of the situation.	1	2	3	4	5
48. When you tell yourself that you can have a cigarette if you complete some task.	1	2	3	4	5

Appendix F
The Self-Efficacy Assessment

For items 49-65, mark the number that most corresponds to
HOW YOU FEEL ABOUT YOURSELF, choices are:

- 1) Not at all
- 2) Somewhat
- 3) Moderately
- 4) Very
- 5) Extremely

	Not at all	Somewhat	Moderately	Very	Extremely					
	1	2	3	4	5					
49. How important is it to you to quit smoking?	1	2	3	4	5					
50. How capable of quitting smoking are you?	1	2	3	4	5					
51. How confident are you that you will quit smoking this time?	1	2	3	4	5					
52. In general, do you consider yourself a person who succeeds at what you try to do?	1	2	3	4	5					
53. When you are successful, how much do you feel it is because <u>you</u> did something to make it happen (rather than it just happened to you?)	1	2	3	4	5					
54. How difficult do you think it is for you to quit smoking?	1	2	3	4	5					
55. How stressful do you think quitting smoking is for you?	1	2	3	4	5					
56. To what degree do you think stress effects your behavior?	1	2	3	4	5					
57. How tense or uncomfortable do you feel when you think about quitting smoking?	1	2	3	4	5					
58. To what degree do you need help or outside 'aids' to quit smoking?	1	2	3	4	5					
59. To what degree do you have people or a person who is encouraging you to quit smoking?	1	2	3	4	5					
60. In general, how healthy do you consider yourself?	1	2	3	4	5					
61. To what degree do you think your general health status effects your day to day activities?	1	2	3	4	5					
62. How many people do you know who have tried to quit smoking?	1	2	3	4	5					
1) none 2) less than 5 3) 5 to 10 4) 11 to 16 5) 16 or more										
63. On the average, how successful have they been?						1	2	3	4	5
64. How similar to the successful people do you feel you are?						1	2	3	4	5
65. How similar to the unsuccessful people do you feel you are?	1	2	3	4	5					

Appendix G
The Social Support Index

NAME: _____ DATE: _____

**** SOCIAL SUPPORT INDEX ****

- | | None | 1-2 | 3-4 | 5-6 | 7 or + |
|--|------|-----|-----|-----|--------|
| | 1 | 2 | 3 | 4 | 5 |
| 1. How many people do you feel are supportive of your efforts to quit smoking, besides the clinic staff? | | | | | |
| 1) none | | | | | |
| 2) 1-2 | | | | | |
| 3) 3-4 | | | | | |
| 4) 5-6 | | | | | |
| 5) 7 or more | | | | | |
| 2. In general, do you feel their support: (choose one) | | | | | |
| 1) Is helpful, i.e., really encourages you and helps you to stay off cigarettes. | | | | | |
| 2) Is neutral, i.e., is meant well, but does not have much effect on whether or not you're going to smoke. | | | | | |
| 3) Is a hindrance, i.e., is annoying and makes you not want to quit smoking. | | | | | |
| 4) Is meant well, but is a hindrance because it leads to your smoking for other reasons. | | | | | |
| 5) None of the above. | | | | | |
| 3. In your estimation, how many of your closest acquaintances, family, and friends smoke cigarettes? | | | | | |
| 1) none | | | | | |
| 2) less than half | | | | | |
| 3) about half | | | | | |
| 4) more than half | | | | | |
| 5) all of them | | | | | |
| 4. In your estimation, how many of your closest acquaintances, family, and friends are ex-smokers? | | | | | |
| 1) none | | | | | |
| 2) less than half | | | | | |
| 3) about half | | | | | |
| 4) more than half | | | | | |
| 5) all of them are ex-smokers | | | | | |
| 5. If you are in a relationship, does your spouse or lover smoke cigarettes? | | | | | |
| 1) no partner | | | | | |
| 2) yes, always | | | | | |
| 3) yes, sometimes | | | | | |
| 4) no, he/she quit | | | | | |
| 5) no, he/she never was a smoker | | | | | |
| 6. Please mark the response that describes your feelings about your spouse or lover's support of your efforts to quit smoking cigarettes: | | | | | |
| 1) I currently have <u>no partner</u> | | | | | |
| 2) He/she is <u>against my quitting</u> | | | | | |
| 3) He/she <u>seems neutral</u> , i.e., doesn't mind as long as I don't ask him/her to quit or change anything | | | | | |
| 4) He/she <u>moderately supports</u> my quitting by making encouraging comments to me | | | | | |
| 5) He/she is <u>highly supportive</u> of my quitting smoking. Has gone out of his/her way to help me. For example, if he/she smokes, has tried to not smoke around me or even tried to quit. | | | | | |

