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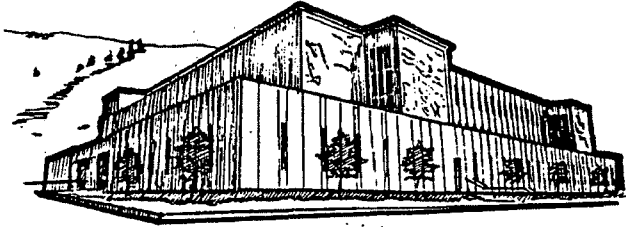
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Attributions, Affect and Self-Efficacy:
Validation of the Abstinence Violation Effect
with Abstinent, Slip-abstinent, and Relapsed Smokers

by

Andrew B. Forsyth

B. S., Brigham Young University, 1986

Presented in partial fulfillment
of the requirements for the degree of

Master of Arts

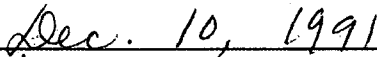
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Psychology

Attributions, Affect and Self-Efficacy: Validation of the
Abstinence Violation Effect with Abstinent, Slip-abstinent,
and Relapsed Smokers

Director: John R. Bradley, Ph.D.

The Abstinence Violation Effect (AVE), a cognitive-affective reaction hypothesized to be an immediate link between initial postcessation smoking and full relapse, was operationalized and partially validated with a sample of recently self-quit abstainers (N = 51), a sample of slip-abstainers (N = 46), and a sample of relapsers (N = 52). The AVE was operationalized as a combination of internal, global, stable, and uncontrollable causal attributions made for a smoking lapse. Affective reactions believed to be associated with causal attributions were also assessed. These included postlapse/temptation guilt, as well as changes in self-efficacy and perceived control over smoking. Subjects were solicited from the University population, and self-selected into three groups according to self-reported postquit smoking status. Subjects completed a questionnaire in which they described attributions, use of coping, and feelings regarding their initial return to smoking experience. Multivariate analyses of variance (MANOVA) and discriminate function analyses produced mixed findings with regards to the AVE predictions: Relapsers made internal, stable, global, and controllable causal attributions for smoking. The responses of abstainers and slip-abstainers were similar on all measures, consisting of external, unstable, global, and controllable causal attributions. Two of four attributional dimensions (locus of causality and globality) were significantly related to relapse criterion measures, while the dimensions of globality and controllability were unrelated to outcomes. As hypothesized, self-efficacy and control over smoking increased significantly for abstainers following a temptation to smoke, and did not change for slip-abstainers following the initial return to smoking episode. Smokers in all groups reported little postlapse/temptation guilt, and relapsers experienced no loss of self-efficacy and control over smoking as hypothesized. Discussion suggested that the reaction of relapsers was associated with their making controllable causal attributions; resulting in little self-blame and no loss of self-efficacy and control over smoking. It was observed that although the AVE holds promise as a significant predictor of relapse, it may be better operationalized as a combination of only locus of causality and stability ratings. Recommendations were made for further refinement of the AVE construct as well as additional study of the controllability dimension.

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ACKNOWLEDGEMENTS

The author would like to thank all those whose support and assistance throughout this project was especially valuable and greatly appreciated. In particular Dr. John Bradley, whose knowledge, direction, and pragmatism (together with timely prodding) helped me to clarify the task and focus my efforts in the most efficient manner. I am indebted to Dr. Colin Henderson for his assistance with (and tutoring in) statistical analysis and interpretation. His door was always open and his patience, eagerness, and willingness to help seemed limitless and will long be remembered. In addition, I am grateful to my colleague and friend Brad Woldt for sharing his time, knowledge, and encouragement on numerous occasions. The contribution of an astute and motivated research assistant such as Sean Lynaugh was an unexpected and welcome treat. I am also grateful to my parents and family for the many ways in which they contributed to the success of this project. Lastly, I wish to express gratitude to my wife Elisia for the encouragement, patience, and support she freely extended throughout this endeavor.

CHAPTER 1

Introduction

Attributions, Affect, and Self-Efficacy:

Validation of the Abstinence Violation Effect with Abstinent, Slip-abstinent, and Relapsed Smokers

The negative health consequences and medical costs associated with cigarette smoking are well established and of considerable magnitude. Increased morbidity from heart and cardiovascular disease along with several forms of cancer and chronic obstructive lung disease have all been linked to cigarette smoking (United States Public Health Service [U. S. P. H. S.], 1988). Annual estimates have associated smoking with 170,000 deaths due to cardiovascular disease, 130,000 deaths due to cancer, and 50,000 deaths related to chronic obstructive lung disease in the United States (U. S. P. H. S., 1988). "Smoking alone doubles the rate of heart disease, when it is combined with either hyperlipidemia or hypertension, the risk is four times greater, and when all three risk factors are present, the risk is eight times greater" (Klesges, Myers, Klesges, & LaVasque, 1989, p. 204). The estimated total health care cost (i.e., medical care, lost wages, decreased productivity, accidents) is believed to be 56 billion dollars per year in the United States alone (U. S. P. H. S., 1987).

Despite the magnitude of health care costs and the cumulative evidence of thousands of studies linking smoking to these as well as to other health and economic risks, 26.5% of American adults presently smoke (U. S. P. H. S., 1987). Between 1965 and 1987, the smoking rate of adult males in the U.S. decreased from 50.2% to 31.7%, and among U.S. women from 31.9% to 26.8% (U. S. P. H. S., 1988).

National survey data have shown that one-third of all smokers attempt to quit annually, with only about one fifth of them succeeding (Harris, 1980). It is not known, however, how many of these quitters remain abstinent for any appreciable length of time. For treated smokers, the temporal patterning of the relapse process has demonstrated that about two-thirds of quitters return to smoking within 90 days following cessation of treatment (Hunt, Barnett, & Branch, 1971). Though adult smoking rates appear to be slowly declining in the United States, it is clear that cigarette smoking continues to be one of the more difficult and refractory addictions to change.

Smoking Cessation and Relapse

Researchers are increasingly interested in investigating the circumstances and conditions under which people who have quit smoking relapse, that is, return to regular smoking (Cummings, Gordon, & Marlatt, 1980; Lichtenstein, Antonuccio, & Rainwater, 1977; Shiffman, 1982). Historically, relapse was understood to be the

result of an internal compulsive need which was manifested as a physical craving, and that in order to be considered in control of the addiction, one must necessarily remain in a state of total abstinence (Shaw, 1985). Any subsequent violation of abstinence meant that the individual gave up control of the behavior and was totally relapsed or out of control (Jellinek, 1960). Individual differences and situational determinants of the relapse episode have been traditionally minimized or discounted. Only more recently has the concept of relapse as a process, or progression of cognitive and behavioral events which culminated in resumption of the behavior, been proposed and investigated. (Burt, 1974; Hore, 1971; Marlatt, Demming, & Reid, 1973).

The cognitive and behavioral determinants of addiction relapse have been included in investigations guided by cognitive-behavioral and social learning formulations (Fisher & Farina, 1979; Marlatt & Rohsenow, 1980). Recent years have witnessed the emergence of several behavioral models of alcohol and tobacco relapse which have sought a clearer understanding of the relapse process. The goal of these models is the identification of groups of persons who are most likely to make the transition from abstinence to full relapse. These models included conditioned withdrawal relief theories (Wikler, 1965), conditioned appetitive motivational theory (Stewart, deWit, & Eikelboom, 1984), and social learning formulations (Marlatt & Gordon, 1980; 1985).

The present investigation was concerned with the social learning model proposed by Marlatt and Gordon (1980, 1985) which has emerged as one of the more influential and comprehensive addiction models presently postulated. This recently formulated and increasingly cited model of addiction etiology and treatment appears to be gaining widespread clinical acceptance in the treatment of various addictions such as smoking (Shiffman, Read, Maltese, Rapkin, & Jarvik, 1985), alcoholism (Marlatt, 1985a), overeating (Marlatt, 1985a), and sexual offending (Laws, 1989). While many studies have sought to demonstrate the treatment efficacy of the Marlatt and Gordon treatment model, few investigators have tried to empirically validate it's various components and constructs. The aim of the current study was to validate a key component of the Marlatt and Gordon relapse model, the construct of the Abstinence Violation Effect (AVE). To preface the discussion of the AVE construct and the specific goals of this study, a general overview of the addiction model upon which it is based follows.

A Social Learning Model of Addiction

Marlatt and Gordon (1980, 1985) have proposed a model of addiction derived from social learning theory, cognitive psychology, objective self-awareness theory, and experimental social psychology. This model is a comprehensive theory of addiction development and change,

and makes several important assumptions that significantly differ from historically accepted medical/disease and moral models (Marlatt, 1985a). Rather than ascribing the addiction process to a genetic predisposition, biological disease, or failure to exercise control or willpower, social learning theory describes addictions as overlearned or "bad" habits (Marlatt & Gordon, 1985). The determinants of addictive drug use such as situational and environmental antecedents, beliefs and expectations, individual history, and prior experience with the drug, are believed to be important aspects involved in the development of addictive drug use.

Research suggests that cognitive and environmental factors such as set and setting often influence the determination of drug effects more than the pharmacological effects of the drug itself (Marlatt & Rohsenow, 1980). The implications are that cognitive processes such as expectations and attributions are learned, and hence, more open to modification and changes than are fixed physiological processes. Viewing addictive behaviors as acquired habit patterns that may be modified in much the same way as other habits has direct treatment implications. For example, treatment may involve combining cognitive interventions such as self-efficacy enhancement and attribution retraining, together with behavioral interventions such as coping skill assessment and training.

Addictive behaviors are usually followed by some form of immediate benefits or gratification that are reinforcing and may serve as possible maladaptive coping responses (Shiffman & Wills, 1985). For example, a person might smoke consistently in response to a perceived stressful situation in order to obtain a sense of relief or control. As Klesges et al. (1989) emphasized, efforts to quit smoking are made more difficult by some of these perceived immediate instrumental benefits (such as positive behavioral and emotional associations, stress reduction, weight control etc.) that smoking provides over the probabilistic and uncertain long term health consequences associated with the addiction (such as heart disease, various cancers, emphysema). In addition, quitting smoking may produce temporary negative consequences such as nicotine withdrawal and craving, and other possible unpleasant symptoms that may precede the postcessation return to smoking or relapse (Shiffman, 1982; Shiffman, Read, & Jarvik, 1985). While it is important to acknowledge a physical component in drug craving and withdrawal, overemphasizing these physiological factors may overshadow the fact that drug taking behaviors are strongly influenced by learned expectations and anticipation of the desired effects of the activity (Marlatt, 1985a).

By conceptualizing not only the development of addictions but also the recovery process as a learning task,

it was possible to reframe an understanding of the change process associated with cessation and maintenance of change over time (Marlatt, 1985a). This reframing included viewing the change process as progressing through three separate phases or stages: (1) commitment and motivation (preparation for change); (2) implementation of the specific behavioral change (cessation of drug use); and (3) maintenance of change (abstinence or controlled drug use) (Marlatt & Gordon, 1985; Prochaska & DiClemente, 1983). It is with maintenance, the final and arguably most important stage of change (Baer & Lichtenstein, 1988; Borland, 1990; Marlatt, 1985a), that this study was concerned.

As reported by Cronkite and Moos (1980), most of the variance associated with long-term outcomes of alcoholism treatment (and the same may be said of smoking treatment) is accounted for by postcessation events occurring after the completion of treatment. Researchers are presently realizing that while much treatment emphasis has been traditionally placed on the quitting stage of change, little attention has been given to the maintenance stage and continuance of abstinence (Borland, 1990). The following review of formal smoking cessation treatment and self-quitting success rates graphically illustrates the significance of this oversight.

Formal Treatment of Smoking

In a review of 405 cessation studies, Schwartz (1987) reported that for treatment aided quitters, 1 year abstinence (i.e., not smoking at time of assessment) rates ranged from 5%-88%, with the median being 26%. Though posttreatment abstinence was achieved as the result of most treatment programs, it appeared that 70-80% of quitters relapsed within 6 to 12 months of quitting (Schwartz). This 20-30% "success" rate, which to some reviewers is viewed as overly optimistic (Levanthal & Cleary, 1980), does little to promote the effectiveness or necessity of formal treatment, especially when many treatment programs may require a considerable financial investment. Formal treatment methods are varied and may include participation in individual or group aversive conditioning (e.g., smoke satiation), hypnosis, cognitive-behavioral training, and acupuncture.

Self-change of Smoking

Until recent years, research into smoking cessation has concentrated almost exclusively on investigating various types of formal treatments (Breteler, Rombouts, & van der Staak, 1988). Little attention has been paid to the most commonly used quitting method: that of unaided or self-change. The American Cancer Society (1986) reported that 90% of the estimated 37 million persons who have successfully stopped smoking since the first Surgeon General's report linking smoking to cancer have done so on

their own. The most commonly reported method of self-quitting is abrupt cessation or "cold turkey", though other methods are frequently used (e.g., substituting food, exercise, chewing gum, etc.).

Quitters who choose not to seek formal treatment may do so in the belief that since they are responsible for the development of the addiction they should be capable of overcoming it on their own. Other smokers may have negative attitudes toward treatment and the implication that entering treatment implies assuming the label of "addict" which may be stigmatizing (Marlatt, Baer, Donovan, & Kivlahan, 1988). The monetary cost of receiving treatment in a professionally conducted clinic, or of visiting a doctor to obtain a prescription for nicotine gum may also be prohibitive for some persons seeking to quit smoking.

Seventy percent of smokers surveyed by McAlister (1975) indicated that if they were to quit smoking it would be without the aid of formal treatment. Though it appears that the majority of smokers prefer to attempt quitting on their own, researchers have only recently begun to focus attention on the factors and processes involved in self-change (Cohen et al., 1989; Garvey, Heinhold, & Rosner, 1989; Prochaska & DiClemente, 1983; Schachter, 1982; Wilcox, Prochaska, Velicer, & DiClemente, 1985). The paucity of research investigating self-change of smoking is both unwarranted and unfortunate given that outcomes for self-quitters have been

shown to compare favorably with those of aided quitters. In an influential albeit highly controversial survey of self-quitters, Schachter (1982) reported that over 63% of smokers in his samples were able to successfully quit smoking without treatment. Fifty-six percent of these self-quitters reported abstinence for at least one year prior to the study. Similar high abstinence rates were reported by Rzewnicki and Forgays (1987) in their replication of Schachter's study.

Though not reporting quit rate levels comparable to Schachter (1982), results of subsequent self-change studies have in general supported the finding that self-changers fared as least as well as aided quitters in long-term maintenance of abstinence. Marlatt, Curry, & Gordon (1988) followed a sample of self-quitters for 2 years and reported a 24% abstinent rate at 1 year. In a comprehensive review of smoking cessation studies, Schwartz (1987) reported 1 year abstinence rates for self-quitters to range from 16%-20%, with a median of 18%. Gritz, Carr, and Marcus (1988) found that 25% of their sample of self-quitters were abstinent at a 1 year follow up.

Most recently, the findings of a large multi-sample collaborative study comparing 1-year self-quit abstinence rates with formal treatment outcomes, did not support the superiority of self-quitting over formal treatment. Cohen et al. (1989) presented data from ten prospective studies of

self-quitters, and showed 12-month abstinence rates for self-quitters (which ranged from 8.2% to 25.1% with a median of 13.9%) to be similar to or lower than the traditionally cited formal treatment rates (20%-30%).

Though the issue of relative superiority of self-quitting over formal treatment is still undecided, what is apparent from this review is that long term abstinence rates for treated as well as self-quitters are disappointingly low. Although most smokers are able to initially "kick the habit", few persevere through the early days, weeks and months of the maintenance stage. The failure of most formal treatments to adequately prepare clients to undertake long term maintenance of abstinence is a serious challenge to their efficacy and credibility. Consequently, further determination of the cognitive, behavioral, and biological correlates of smoking, quitting, and attempts at maintenance of cessation is necessary in order to design, improve, and implement more powerful and effective treatments.

It is also apparent that unaided or self-change of smoking is a more practiced, more preferred, and possibly more effective means of quitting than formal intervention. Self-change efforts are presently receiving long overdue research attention, and are being studied with increasingly sophisticated research methods. One of the aims of the current study was to contribute to current understanding of

the self-change process by focusing on the process of relapse among self-quitters.

A Social Learning Model of Relapse

Marlatt and Gordon's (1980, 1985) model departed from other approaches to the analysis of relapse by not focusing on pre-existing personal factors that were predictive of relapse (such as physical dependence, personality factors). It emphasized instead the interpersonal and intrapersonal experiences and affective and cognitive reactions involved in the single postcessation event of smoking, or "lapse", that may precipitate continued use or relapse (Brandon, Tiffany, Obremski, & Baker, 1990). Marlatt (1985a, p. 36) argued that there were, "common cognitive, affective, and behavioral components associated with the initial lapse itself, regardless of the particular addictive substance or activity involved". Before addressing the determinants and process of relapse, a working definition of relapse and lapse from a social learning model's perspective is needed.

Defining lapse and relapse. There are two common definitions of relapse, each of which reflects a bias regarding the nature and severity of the event (Marlatt & Gordon, 1985). Webster's New Collegiate Dictionary (1984, p. 994) gives both definitions. The first, which clearly implies an underlying medical/disease notion of addiction states: "a recurrence of symptoms of a disease after a period of improvement". This definition assumes that

relapse is an internally driven, biologically controlled process that is completely outside of the addict's conscious control. The second definition, which is more in line with a social learning formulation, is: "the act or instance of backsliding, worsening, or subsiding" (1984, p. 994). The emphasis of this definition is on the single act of slipping or "lapsing" rather than on a full return to the addictive pattern. Defining a single instance as a lapse implies something less serious such as a slip or mistake which may not necessarily lead to a full relapse. What it may suggest instead is that corrective action is possible, so that a complete return to the behavior does not occur. Thus, in some cases a person may actually benefit from a slip or lapse, as possibly new and useful information about both the cause of the event and how to correct for its occurrence in the future is provided (Brownell, Marlatt, Lichtenstein, & Wilson, 1986; Marlatt, 1985a). There is support for this distinction, sometimes referred to as a "prolapse", with smokers (Mermelstein & Lichtenstein, 1983) and with dieters (Dubbart & Wilson, 1984).

One challenge to a "backsliding" or "slipping" definition is in deciding when a lapse becomes an uncontrolled return to smoking or full relapse (Brownell et al., 1986). Different persons may be capable of returning to various amounts of limited and controlled tobacco use. For this reason and for the purposes of the current study,

abstinence was operationalized as no (0) instances of cigarette smoking after a serious attempt to quit (i.e., a period of at least 24 hours without smoking). A 24 hour period of continuous abstinence has been often recommended as a definition of a serious quit attempt (Ossip-Klein et al., 1986). A lapse has been defined as one or more instances of postcessation smoking without returning to "regular" cigarette use. This was operationalized as smoking on less than 2 occasions per week after a 24 hour period of abstinence (O'Connell & Martin, 1987). Relapse was operationalized as smoking on 2 or more occasions per week after a 24 hour period of abstinence (O'Connell & Martin).

The process of relapse. It was postulated initially that while maintaining abstinence a quitter experienced a sense of personal control over smoking, as well as confidence that a temptation to smoke could be dealt with successfully (self-efficacy) (Marlatt, 1985b). Perceived control over smoking and self-efficacy increased in strength the longer the person succeeded with abstinence until he/she encountered a high-risk situation (HRS). An HRS was defined as any situation that posed a threat to the abstainer's feeling of control over smoking, and increased the likelihood of relapse (Marlatt, 1985b). Research findings have indicated that certain specific events and situations are typically associated with smoking and relapse, and may

be defined as "high-risk" determinants. Cummings, Gordon, and Marlatt (1980) reported that 71% of smoking relapses were associated with the following three primary high-risk situations: (1) 35% were associated with negative emotional states: situations in which the individual experienced an unpleasant or negative emotional state or mood (i.e., anger, depression, anxiety, boredom) not related to an interpersonal event. (2) 16% were associated with interpersonal conflict: situations which involved a recent conflict in an interpersonal relationship (e.g., marriage, friendship, work). (3) 20% were associated with social pressure: situations where an individual responded to direct or indirect influence to smoke by another person or group of individuals.

Marlatt and Gordon (1985) hypothesized that the likelihood of relapse depended upon the abstainer's ability to cope with a HRS. If an abstainer was able to execute an effective coping response, the probability of relapse diminished; and the individual presumably experienced an increased sense of control, as well as increased confidence for coping with future HRSs (self-efficacy). If instead, he/she failed to cope with the HRS, then relapse became more likely. The person may perceive the situation as beyond his/her ability to cope, and thus experience feelings of hopelessness, loss of control, and lowered self-efficacy (Abramson, Seligman, & Teasdale, 1978; Marlatt, 1985b).

This cognitive reaction, combined with positive expectations about the effects of smoking, set the stage for a probable relapse. If the abstainer "slips" and smokes, then a critical juncture has been reached. Whether the first slip or lapse becomes a full relapse may largely depend on the causal attributions the "lapse" makes as to the cause of the lapse, as well as the emotional reactions associated with its occurrence (Marlatt, 1985b). This cognitive-affective reaction to a lapse, labeled the Abstinence Violation Effect (AVE), is believed to be an "immediate link" facilitating the escalation of an initial lapse into complete relapse (Marlatt & Gordon, 1980, 1985).

The Abstinence Violation Effect (AVE)

The AVE is believed to be comprised of two factors: (a) a causal attribution of responsibility for the slip and (b) an affective reaction to the attribution. According to Marlatt (1985b), the AVE influences the probability of a relapse in the following way. In instances of a smoking response to a HRS, the experience of the initial slip leads the smoker to self-examine and to make cognitive attributions as to the perceived cause of the lapse. If the lapse is attributed to external, unstable, specific, and controllable factors (e.g., a lack of coping skills in a high risk situation, environmental constraints, bad luck) the negative affective reaction is lessened, and the smoker "saves face" by not blaming him/herself for the lapse. In

such instances the AVE is minimal and the person is theorized to be more likely to regain control and avoid a full relapse. If on the other hand, the person attributed the lapse to factors that were internal, stable, global, and uncontrollable (e.g., a lack of willpower, an addictive personality, or underlying disease mechanism) a reaction of guilt and self-blame was believed to occur. The magnitude of this affective reaction was postulated to vary as a function of the self-evaluated discrepancy between one's behavior (the lapse) and one's ideal state (as an abstainer): the larger the discrepancy, the greater the negative emotional reaction (e.g., guilt, shame, dysphoria) and likelihood of relapse. This formulation is based in part on Weiner's (1974, 1985) attribution theory which proposes specific relationships among cognitive processes such as attributions, expectancies, and emotions.

Weiner (1974, 1985) ascribed to the notion that cognitions are primary determinants or causes of emotion (i.e., "you feel the way you think"). In addition, the work of Abramson and her colleagues (Abramson, Garber, & Seligman, 1980; Abramson et al., 1978) assumed that attributions of causality influenced subsequent expectations of future performance capabilities in similar situations. Expectations of success or failure, labeled self-efficacy by Bandura (1977), may influence the extent to which performance in the same or similar task is enhanced or

debilitated. It seems plausible that the task of "not smoking" will likewise be influenced positively or negatively by how one construes prior success or failure at "not smoking".

Bandura (1977) first postulated that people's perceptions of their capabilities or self-efficacy, determined whether or not they performed or avoided a behavior. This cognitive variable consists of judgments that persons make about their ability to execute a specific behavior or task. Efficacy expectations are postulated to influence the amount of effort expended in performing a task, the length of persistence in the face of obstacles, as well as thoughts and emotional reactions to stressful situations (O'Leary, 1985).

Attributional dimensions of causality. In his Expectancy x Value theory of achievement motivation and emotion, Weiner (1974, 1985) proposed that cognitive attributions are defined by underlying causal dimensions. He postulated three dimensions of causality that attributional researchers have used to organize causal concepts. Causal concepts are the "first-order" perceived causes given by laypersons to explain a prior success or failure in a specific task. For example, a person may ascribe success in an achievement task as caused by hard work, high ability, and good luck. Conversely, failure to succeed may be attributed to or caused by low ability, a

lack of trying, task difficulty, or poor luck.

Attributional theorists have for years attempted to organize these and other causal concepts into a taxonomy or causal scheme.

Through various mathematical techniques theorists have consistently supported the identification of the three underlying causal dimensions originally proposed by Weiner (see Weiner, 1985 for a review). These dimensions were believed to be orthogonal and were considered "second-order concepts", that is, they subsumed the layperson's perceived "first-order" causes of success and failure. The first of Weiner's causal dimensions was locus of causality, which meant causes were perceived as being internal or external to the person. For example, ability, effort, and mood are internal properties, while task difficulty and luck are external or environmental causes. The second dimension is stability, which characterized causes along a continuum of stable (invariant) to unstable (variant) over time. The third dimension was controllability, which referred to causes being perceived as personally controllable (volitional) or uncontrollable. A fourth dimension, globality, was proposed by Abramson et al. (1978) and assessed whether causes were perceived as occurring across situations or specific only to certain situations. According to Weiner (1985) the globality dimension has yet to be as reliably demonstrated as the other three

dimensions; however, it is included in Marlatt and Gordon's (1985) conceptualization of the AVE, as well as Curry et al.'s (1987) operationalization of the AVE. Since it was proposed as a component of the AVE construct, and so related directly to the aims of the current study, the globality dimension was included as an attributional dimension. Attribution-emotion research related these causal dimensions, rather than the specific causes, to subsequent affective reactions.

Affective consequences of causal attributions. Weiner (1974, 1985) maintained that the affective or emotional impact of an event depended upon the cognitive attributions ascribed as to the causes of the event. He postulated that internal, stable, and uncontrollable causal attributions were associated with the emotional reactions of guilt and shame. This cognitive-affective reaction (when it includes the globality dimension) has been labeled "characterological self-blame" by Janoff-Bulman (1979). Marlatt (1985) proposed that this aversive reaction has motivational and energizing properties similar to Festinger's (1964) concept of cognitive dissonance. In the case of a return to smoking episode, the lapses experiences dissonance between his/her's ideal self-image as an abstainer or quitter, and the discrepant behavior of the lapse.

Marlatt and Gordon (1980, 1985) hypothesized that this cognitive dissonance, with its accompanying guilt and shame,

promoted relapse. The greater the dissonance between one's view of him/herself as an abstainer and the behavior of the lapse, the greater the negative affective reaction. Thus, the reaction of guilt, shame, and depression may help promote the overlearned, habitual, behavioral response of smoking. This appears more likely to occur with persons who in the past have relied on smoking to cope with negative emotional states.

Marlatt (1985b) proposed that this "exacerbation effect" was associated with a cognitive reaction of realigning the self-image (e.g., as a hopeless addict, or victim of a disease) with the ongoing dysfunctional behavior. What supposedly occurred in concert with these behavioral and cognitive reactions was a feeling of diminished control over smoking, and a subsequent loss of confidence for managing future temptations to smoke (self-efficacy) (Marlatt). Consequently, the person came to view him/herself as a hopeless, helpless, and out of control addict. The intensity of the AVE was believed to hinder the ability to recover from the initial slip and may actually serve to facilitate a full blown relapse.

Conversely, the Marlatt and Gordon (1980, 1985) relapse theory predicted that if smokers attributed the lapse to external, unstable, specific, and controllable causes, the AVE would be minimal or lessened, resulting in a relatively unchanged level of self-efficacy and control (Marlatt,

1985b). An attribution of behavioral blame rather than characterological blame allowed the lapser to "save face" by accepting that his actions were to blame for the slip and not his character. Seeing him/herself as a quitter who experienced only a "slip up" rather than having "blown it" by smoking, should theoretically produce a less negative emotional reaction. It is more likely that this type of lapse would be followed by a return to abstinence, allowing the quitter to feel that he/she did not lost control and need not abandon efforts to quit.

As stated at the outset, the aim of the present study was to validate the construct of the AVE as postulated by Marlatt and Gordon (1980, 1985). Though the Marlatt and Gordon relapse model is increasingly cited as a viable formulation of the process of addictive relapse, the fundamental construct of the AVE has only recently been operationalized in an attempt to demonstrate it empirically. The following review of attributional research and smoking reveals that as of yet, the AVE construct has not been adequately operationalized and validated in the published literature.

Operationalization and Validation of the AVE Construct

In a pilot study with 36 formally treated smokers, Goldstein, Gordon, and Marlatt (1984) demonstrated that quitters who made internal, stable, and global attributions for the cause of their initial smoking episodes (lapses),

were more likely to later relapse than quitters who made external, unstable, and specific attributions. Building on these findings Curry, Marlatt and Gordon (1987) attempted to operationalize the AVE by assessing the perceived causes of smoking on three attributional dimensions (locus of causality, stability, and globality); assessing the negative affective reaction (i.e., level of guilt over lapsing); and assessing the perceived feeling of control, prior to and immediately following actual initial smoking lapses.

For the prospective assessment, subjects completed two questionnaires which presented them with six hypothetical smoking situations in which they might be tempted to smoke. In the first presentation the outcome of each situation was to be smoking, and in the second presentation the outcome was to be abstinence. The questions also included an open-ended request to note one major cause for having smoked. The three attributional dimensions were assessed relative to the cause identified by the subject. That is, they rated the extent to which they felt the perceived cause was due to themselves or other people (locus of causality); whether the cause would be present in similar circumstances in the future (stability); and whether the cause influenced other areas of their lives beside smoking (globality).

Scores were based on a 7-point rating scale with higher values indicating more internal, stable, and global attributions, and lower values indicating more external,

unstable, and specific attributions. An AVE score was computed for each subject by combining and averaging the three attributional dimension ratings. Curry et al. (1987, p. 147) maintained that, "because the AVE is conceptualized as a combination of internal-external, stable-unstable, and global-specific attributions" the ratings should be combined into a single rating. The format of the attributional ratings was the same for the retrospective assessments, with subjects making attributional ratings for a stated cause of smoking. Weiner's (1974, 1985) attributional dimension of controllability was not assessed by Curry et al. As discussed, controllability referred to an individual's perception of a cause as being under personal control or volition versus being uncontrollable. Weiner (1985), and Marlatt and Gordon (1980, 1985), emphasized the influence of perceived controllability of causes on emotions (e.g., uncontrollable cause = guilt, self-blame). Other investigators as well have included assessment of this attributional dimension (Schoeneman, Hollis, Stevens, Fischer & Cheek, 1988; Schoeneman, Stevens, Hollis, Cheek, & Fischer, 1988).

Curry et al. (1987) found that prospective pretreatment attributions given for a hypothetical future smoking situation differed from retrospective attributions given for the actual lapse. This suggested that hypothetical causal attributions given for a future event may not be related to

or predictive of the kinds of attributions given for the actual event. If this is so, prospective assessment of attributions may contribute less meaningful information about the process of relapse than retrospective attributions obtained shortly after the actual incident.

On the retrospective assessment the findings supported the AVE model's predictions: relapsers obtained significantly higher AVE scores than those who lapsed and recovered abstinence (slip-abstainers). Curry et al. (1987) concluded that the, "AVE was a significant predictor of return to regular smoking after an initial lapse" (p. 148).

Quitter's pre and postlapse feeling of control over smoking was also assessed, and as hypothesized by the model, slip-abstainers reported an increase in control consistent with their recovery of abstinence; however, relapsers tended to report no change in control after a lapse, a finding that did not support the model's prediction. Curry et al. (1987) did not assess the self-efficacy component of the AVE. As earlier reviewed, the relapse model predicted that low self-efficacy expectancies, particularly if attributed to internal, stable, and uncontrollable causes or characteristics, are believed to contribute to a loss of perceived control over smoking and feeling of helplessness (Abramson et al. 1978; Marlatt, 1985b). Although lowered self-efficacy is thought to be associated with a loss of perceived control over smoking, the level of self-efficacy

requires direct assessment and cannot be inferred exclusively through measuring a change in perceived control.

Curry et al. (1987) were the first investigators to attempt to empirically operationalize and validate the AVE construct. As with Goldstein et al. (1984), Curry and her colleagues obtained complete attributional data from only 36 subjects, and based their findings on this small and possibly unrepresentative sample. The studies reviewed below also included assessment of attributional dimensions and lend some support to the notion of the AVE construct.

O'Connell and Martin (1987) investigated causal attributions to a smoking lapse made by temporary lapsers (i.e., slip-abstainers) and relapsers, and reported that relapsers made more internal attributions for their initial smoking episode while temporary lapsers made more external attributions. In this study lapsed and relapsed quitters rated the extent to which they felt the slip was attributed to an internal cause (willpower) or to an external cause (environmental factors). While not specifically investigating the AVE construct, these findings supported the direction of the locus of causality dimension as postulated by Marlatt and Gordon (1980, 1985).

Schoeneman, Hollis, Stevens, Fischer, & Cheek (1988) also adapted Weiner's (1985) attributional theory to the assessment of causal attributions, emotions, and expectancies of nonsmokers (i.e., abstainers and slip-

abstainers) and smokers (i.e., slip-relapsers and relapsers) 1/2 to 2 years after participation in formal smoking treatment. Schoeneman et al. (1988b) examined whether long term reconstruction of cognitive attributions, emotions, and expectancies assessed almost 2 years postcessation, would distinguish between nonsmokers and smokers. In addition they differentiated between "characterological self-blame", (i.e., AVE: internal, global, stable, and uncontrollable causal attributions), and "behavioral self-blame", which included internal attributions that were specific, unstable, and controllable (Janoff-Bulman, 1979). Janoff-Bulman's definition of behavioral self-blame consisted of the same external, specific, unstable, and controllable attributions proposed by Marlatt and Gordon (1980, 1985) as promoting favorable outcomes. Schoeneman and his colleagues maintained that both "good" and "bad" attributions are necessarily internal to the person; and that the essential difference between "good" behavioral and "bad" characterological attributions had more to do with the stability, globality, and controllability dimensions, and less to do with the locus of causality (internal versus external) dimension. This contrasted with the importance Marlatt and Gordon placed on the relationship of locus of causality with later relapse or recovery of abstinence. Although characterological self-blame and behavioral self-blame are both considered internal attributional

formulations, the differences between them are consistent with the internal-external dimension included in the AVE conceptualization. The current study did not propose to argue for the conceptual superiority of one definition of behavioral self-blame over the other, but rather, sought to validate a specific formulation theorized to be associated with success or failure of recovery of abstinence following postcessation smoking.

Schoeneman et al. (1988b) hypothesized that relapsed smokers would engage in more characterological self-blame for a slip, and that slip-abstainers who recovered from a lapse would engage in more behavioral self-blame. Their findings supported this hypothesis and demonstrated that the majority of slip-abstainers and relapsers attributed causes of smoking to internal causes. The negative affect component of the AVE was not supported, as both slip-abstinent and relapsed quitters felt neither better nor worse after lapsing. This finding may have resulted from the long period of elapsed time between the actual slip and the reconstruction of the emotional event for the assessment (Schoeneman et al., 1988b).

The amount of elapsed time between an incident of smoking behavior and the time of assessment, as well as the small sample of subjects (N=32) in this study indicate a need for caution in interpreting the conclusions of Schoeneman et al. (1988b). For instance, Vuchinich, Tucker,

Bordini, and Sullwold (1981) noted that a year after relapsing, alcoholic's initial internal attributions as to the cause of their relapse shifted to more external or "face saving" attributions. The possible reconstruing and changing of causal attributions over time, together with problems of memory distortion and incomplete recall of specific cognitions and emotions, are potential methodological difficulties associated with assessment of long term retrospective data.

Summary and Rationale for the Current Study

Although many successful quitters report achieving and maintaining abstinence without formal treatment, the high relapse rates associated with both formal treatment and self-change of smoking illustrates the need for increased investigation and understanding of the maintenance phase of smoking cessation. The critical period of days and weeks following initial abstinence appears to determine success or failure in quitting. As stated, an estimated two-thirds of quitters experienced a relapse within three months of attempting to quit. If factors associated with early relapse after cessation can be identified, and their contribution to this phenomenon better understood, more powerful strategies and techniques may be developed to assist in avoiding or minimizing the effects of these episodes. Research is demonstrating that the likelihood of continued maintenance of abstinence as well as the

likelihood of recovery from a future lapse, increases commensurately with the length of time one is abstinent (Borland, 1990).

Once perceived as an all or none phenomenon which resulted from physiological craving, relapse may now be better understood as a progression of cognitive and behavioral events which concludes with the resumption of smoking. Marlatt and Gordon's (1980, 1985) model of the relapse process postulated that whether or not an ex-smoker returns to abstinence or continues to smoke after a lapse, is due largely to the kinds of causal attributions made to explain the lapse, together with the emotional reaction associated with such attributions. This cognitive-affective reaction or Abstinence Violation Effect was first operationalized by Curry et al. (1987). This initial study supported the AVE construct; however, it failed to assess two important AVE concepts contained in the Marlatt and Gordon formulation, namely: perceived self-efficacy, and the attributional dimension of controllability. I maintained that assessment of self-efficacy and controllability of causes was necessary in order to more accurately validate the relapse model. Validating the contribution of these two variables to the AVE reaction would further refine the current operationalization of the AVE construct. Also, most previous smoking cessation and relapse research, including the AVE and attributional studies cited earlier, focused

almost exclusively on investigating treatment aided quitters. The AVE construct had yet to be validated with a sample of self-quitters as done in the current study.

In the next section, a rationale for assessment of self-efficacy and the controllability dimension in validating the AVE construct is presented, followed by a brief argument for the validation of the AVE with a sample of self-quitters. The concluding section poses the question of whether or not a type of AVE reaction may occur in abstainers who have successfully quit smoking, and who since quitting have been tempted to smoke but successfully resisted. A sample of "tempted" abstainers was included in the present study in order to test this hypothesis.

Self-efficacy. The association between self-efficacy and the maintenance of abstinence has been reliably demonstrated (Brandon et al., 1990; Condiotte & Lichtenstein, 1981), though the postulated role of this cognitive variable in the AVE construct and relapse had yet to be empirically demonstrated. According to Marlatt (1985a), abstinent self-efficacy was directly influenced by the execution or non-execution of a coping response and the subsequent cognitive attributions and affective reactions. The Marlatt and Gordon model (1980, 1985) predicted that lowered self-efficacy would be associated with a stronger AVE effect and subsequent relapse, and unchanged self-efficacy would be associated with a lessened AVE reaction

and subsequent recovery of abstinence. I submitted that validation of the AVE construct required assessment of this important cognitive variable, and proposed to operationalize self-efficacy according to the definition provided by Bandura (1977), namely: one's confidence in being able to perform a given behavior.

The attributional dimension of controllability. Since Marlatt and Gordon (1980, 1985) proposed the attributional dimension of controllability to be related to the occurrence of the AVE, its assessment and inclusion in the current AVE operationalization was logical. Although the three dimension attributional assessment developed by Curry et al. (1987) significantly predicted subsequent relapse; this investigator hypothesized that inclusion of controllability as a fourth dimension would further refine the measure and increase it's predictive strength. A rating scale item similar to those used to measure the other causal attributions can be used to assess how much the quitter felt the cause of the lapse was controllable or uncontrollable by him/herself.

Validation of the AVE with self-quitters. As earlier stated, one of the aims of this study was to contribute to the current understanding of the self-change process of smoking cessation. The growing interest in identifying the factors and variables associated with self-quitting was long overdue and seemed justified considering that most people

attempt to quit on their own. Research investigating the occurrence of the AVE in unaided or self-changers may facilitate further understanding of the relapse process with this population. The findings could potentially contribute practical applications to the growing body of self-help literature (e.g., cognitive restructuring, attributional retraining). It appeared that elements of formal smoking treatment as well as methods of treatment presentation may influence internal and external attributions (Harackiewicz et al., 1987). Knowing this, specific treatment interventions may also be designed that will help to modify problematic attributions (e.g., encouraging people to attribute personal responsibility to controllable behavioral factors rather than to uncontrollable characterological deficits) (Curry et al., 1987).

Finally, most studies of smokers' attributions have based their conclusions on relatively small samples of less than 50 subjects. This methodology presented a potential for the occurrence of possible Type I errors, consequently allowing for less confidence in the results. The current study attempted to validate the AVE construct with a larger sample (N= 149 subjects) of smokers attempting to quit on their own.

The cognitive-affective reactions of "highly tempted" abstainers. Marlatt and Gordon (1980, 1985) postulated that abstainers who have succeeded in coping with a temptation to

smoke, experienced an increased perception of control over smoking and enhanced self-efficacy for coping with future HRSs. As is later explained, I questioned whether or not this occurred as proposed by the AVE model. Although Marlatt and Gordon addressed the types of attributions likely to be made by slippers and relapsers to explain the reason or cause for a lapse, they did not investigate the causal attributions abstainers were likely to make for either their success in resisting smoking, or to explain the reason they were strongly tempted to smoke.

Attribution theorists have demonstrated that individuals tend to make "self-enhancing" attributions (i.e., internal, stable, global, controllable) for their positive behaviors or successful outcomes (Bradley, 1978; Forsterling, 1985; Schunk, 1983). If abstainers were likely to attribute their success to internal or dispositional causes, might they also interpret the occurrence of a "close call" or highly tempting situation to the same internal causes? For instance, might an abstainer who attributed successful abstinence to having strong "willpower" (internal cause), also attribute the occurrence of a temptation, even one successfully coped with, to a lack of or weakening of "willpower"? If these types of causal attributions (i.e., internal, stable, global, uncontrollable) occurred, it may be that abstainers are prone to experiencing an affective reaction of decreased self-efficacy, loss of control and

guilt, in response to a temptation to smoke. This negative affective reaction would directly contrast and challenge the postulated increase in self-efficacy and control following successful coping that Marlatt and Gordon (1980, 1985) predicted. Whether a type of "AVE" reaction occurs in response to being tempted had not been directly addressed or investigated in published research as of yet. As discussed in the following paragraph, findings from Shiffman (1984) appear to lend support for this notion.

Shiffman (1984) reported that abstainers calling a stay-quit hotline after surviving a temptation to smoke experienced a decrease in confidence concerning their ability to abstain in future tempting situations (self-efficacy) similar to that of relapsers. Though these abstainers successfully coped with a temptation and did not lapse in a literal sense, they appeared to have "lapsed" emotionally, and felt shaken in their confidence to survive future crises. These ex-smokers may have experienced a type of "AVE" in response a "close call". Though these findings seemed to indicate the occurrence of a negative affective reaction in tempted abstainers, the results of a more recent study by Garcia, Schmitz, & Doerfler (1990) did not. Garcia et al. (1990) reported that abstainers who successfully coped with a temptation to smoke experienced a subsequent increase in self-efficacy. While this study supported the self-efficacy predictions of Marlatt and

Gordon (1980, 1985), it did so without addressing the other cognitive-affective components of the AVE construct. In addition to investigating slip-abstainers and relapsers, the current study included assessment of the causal attributions, changes in self-efficacy, changes in perceived control over smoking, use of coping, and occurrence of negative affect in abstainers who successfully managed a post-quit temptation to smoke.

Hypotheses

AVE. Significant differences were expected between groups for the AVE variable. The group of relapsed smokers were expected to obtain a higher mean AVE score than the slip-abstainer group. It was also predicted that inclusion of the attributional dimension of controllability in the operationalization of the AVE measure would significantly contribute to the ability of the AVE measure to predict potential relapse.

Causal attributions. It was hypothesized that on measures of the four attributional dimensions, abstainers would make external, unstable, specific, and controllable attributions for being tempted to smoke. The causal attributions given for a lapse by slip-abstainers were also expected to be external, unstable, specific, and controllable. Relapsers were expected to make causal attributions for a lapse that were internal, stable, global, and uncontrollable.

Affective reaction. A significant difference between groups was expected for the variable of postlapse/temptation guilt over smoking. Abstainers were hypothesized to obtain the lowest mean score on the guilt rating scale, with slip-abstainers obtaining a higher score, and relapsers obtaining the highest. The mean guilt score of relapsers was expected to contribute significantly to the prediction of relapse.

Perceived control over smoking. A significant interaction between levels of smoking status as a function of time was expected between groups for the control over smoking variable. The mean control over smoking rating scale score was not expected to differ between abstainers, slip-abstainers, and relapsers on the prelude/temptation measure. The mean control score for abstainers was expected to increase significantly from pre to posttemptation, while this score was not expected to increase from pre to postlapse for slip-abstainers. The mean control score of relapsers was expected to decrease significantly from pre to postlapse. Abstainers were expected to obtain the highest mean control over smoking score. The mean postlapse control score of relapsers was predicted to be lower than the mean posttemptation control score of abstainers and the mean postlapse score of slip-abstainers.

Self-efficacy. A significant interaction between levels of smoking status as a function of time was expected between groups for the self-efficacy variable. The mean

self-efficacy rating scale score was not expected to differ between abstainers, slip-abstainers, and relapsers on the prelapse/temptation measure. The mean self-efficacy rating scale score for abstainers and slip-abstainers was predicted to increase from pre to posttemptation, while the mean score for relapsers was expected to decrease significantly from pre to postlapse. For abstainers, the mean posttemptation self-efficacy score was hypothesized to be higher than the mean postlapse self-efficacy score obtained by slip-abstainers. Relapsers were expected to obtain the lowest mean postlapse score. The self-efficacy scores were expected to be significant predictors of potential outcomes.

CHAPTER 2

Method

Subjects

Subjects consisted of a sample of current and former smokers attending the University of Montana during the academic year 1990-91. Of the 326 current or former smokers who completed questionnaires, 98 were not included because of quit attempts which occurred more than 120 days earlier. Thirty-five subjects reported making no attempt to quit smoking, while six subjects quit with the help of formal treatment methods. Three subjects reported never being tempted to smoke since quitting, and 35 questionnaires were incorrectly or incompletely filled out. Complete attributional data included in the current analysis was obtained from 149 smokers who had quit within 120 days of assessment. This final sample consisted of 51 current abstainers, 46 slip-abstainers, and 52 relapsed smokers.

The overall sample (62.7% female) averaged 25.1 (SD = 7.6) years of age, completed 1.9 (SD = 1.1) years of college, and smoked for an average of 8.9 years (SD = 14.9). Abstainers smoked an average of 11.42 (SD = 10.36) cigarettes daily prior to quitting. Slip-abstainers smoked an average of 9.55 (SD = 9.40) cigarettes daily prior to quitting, and presently smoke an average of 2.6 (SD = 3.44) cigarettes per week. Relapsers smoked an average of 17.25 (SD = 13.19) cigarettes daily prior to their last quit

attempt, and presently smoke an average of 11.84 (SD = 7.95) cigarettes daily, and 47.5 (SD = 40.56) cigarettes weekly. The entire sample made an average of 6.9 (SD = 15.31) prior attempts to quit smoking, and 96% of respondents stated they had never used "formal" treatment methods when trying to quit.

Procedure

The subjects described above were solicited from the general population of University of Montana students attending school during the Winter and Spring quarters 1990-91. The experimenter administered the Smoking Experiences Survey to several classes in the Departments of Psychology and Biological Sciences, as well as to the Introductory Psychology course subject pool. Subjects required approximately 10-15 minutes to complete the 27 questionnaire items, and all participants were identified on the assessment form by an identification number only in order to ensure confidentiality.

Measures

Dependent measures. The smoking status of subjects was assessed on the Smoking Experiences Survey (Appendix A). The questionnaire first determined whether a quit attempt was made by the subject during the past 24 hours to 120 days. According to self-reported smoking status, subjects self-selected into three groups: abstainers, slip-abstainers, and relapsers. A self-quit attempt involved

cessation of smoking without participation in a physician-supervised or other "formal" smoking cessation treatment program or clinic, but did not preclude the use of self-help manuals, or other smoking education literature. Only subjects who made a quit attempt during the past 24 hours to 120 days were included in the analysis. No objective assessment of smoking status was conducted since evidence suggests that self-reports of smoking behavior are reliable, and may even be a more valid indicator of smoking status than physiological measures such as saliva thiocyanate levels (Pettiti, Friedman, & Kahn, 1981).

Independent Measures. The Smoking Experiences Survey (Appendix A) was adapted from the instrument Curry et al. (1987) developed called the Description of Initial Smoking Experience. It initially assessed demographic and smoking history information, followed by the subject describing one main cause or reason for their feeling tempted to smoke (if currently abstaining), and one main cause or reason for smoking (if they have smoked at all since quitting). Written instructions directed abstainers to complete parts 1 and 2 which consisted of 27 items. Quitters who had at least one postquit smoking episode completed parts 1 and 3 which also consisted of 27 items. The four attributional dimensions of locus of causality (internal vs external), stability (stable vs unstable), globality (global vs specific), and controllability (uncontrollable vs

controllable) were each assessed with one item measures. Each of the four items asked for a number response based on a 7-point rating scale. For example, the locus of causality dimension: 1 = totally due to other people and circumstances, and 7 = totally due to me. The responses to the other three items followed the same format. Stability: 1 = will never again be present, and 7 = will always be present. Globality: 1 = influences just this particular situation, 7 = influences all situations in my life. Controllability: 1 = totally controllable by me, 7 = totally uncontrollable by me.

The levels of perceived pre and postlapse/temptation control over smoking were assessed similarly with two items: 1 = "very little in control", 7 = "very much in control". The level of postlapse/temptation guilt was measured by a single item: 1 = "not at all guilty", 7 = "extremely guilty".

Self-efficacy was operationalized by assessing the quitter's perceived level of confidence in executing a coping behavior in response to a future high risk or tempting situation. Erickson, Tiffany, Martin, & Baker (1983) assessed self-efficacy in this manner by asking a single question regarding one's confidence in one's ability to remain abstinent for 1 year. This measure significantly predicted successful outcomes. A similar single item measure of pre and posttemptation (for abstainers) and pre

and postlapse (for slip-abstainers and relapsers) self-efficacy judgments was included in the current study. The two items ascertained the level of confidence in successfully coping with a future temptation to smoke: 1 = "not confident at all", and 7 = "extremely confident". Since the self-report was retrospective, both prelapse and pretemptation perceived self-efficacy and control over smoking consisted of ex-post facto judgments. Use of this methodology is not without precedent (Curry et al., 1987; Shiffman, 1982).

Collecting retrospective data is a procedure commonly used in investigations of smoking relapse incidents (Heinhold, Garvey, Goldie, & Bosse, 1982). Retrospective self-reports of cognitive events as well as the level of use of licit and illicit drugs have been demonstrated as reliable and valid (O'Connell & Martin, 1987; O'Malley, Bachman, & Johnston, 1983; Shiffman, 1982, 1984). It is commonly held that the more recently an assessment follows the actual event, the more reliable the obtained data is expected to be (Marlatt, 1985b); however, data from Heinhold et al. (1989) demonstrated little or no distortion of recall associated with the reconstruction of smoking events reassessed after eight years. In the present study it was believed that accurate recall and assessment of thoughts and feelings was possible for most subjects due to the

relatively recent period of time involved between the event and its assessment (i.e., 24 hours to 120 days).

An AVE score for each subject was computed by averaging the four dimensions of attribution ratings to obtain a single construct rating. Curry et al. (1987, p. 147) reported that significant correlations between the different ratings, "supports their combination into a single rating".

CHAPTER 3

Results

Preliminary univariate analyses of variance (ANOVA) and Chi-squared analyses revealed significant differences between groups on three demographic variables. The mean age of smokers differed significantly between groups. Scheffe post-hoc pair-wise comparison confirmed that the mean age of relapsed smokers ($M = 27$) was significantly greater than the mean ages of abstainers ($M = 23$) and slip-abstainers ($M = 22$). A difference between groups in the number of cigarettes smoked daily prior to quitting was also significant. Subsequent pair-wise comparisons (Scheffe) showed that prior to last quitting, slip-abstainers smoked significantly fewer cigarettes per day ($M = 9.55$, $SD = 9.40$) than relapsers ($M = 17.25$, $SD = 13.19$). The use of coping behaviors in response to a temptation to smoke was also dependent on the level of smoking status. While 80% of abstainers attempted to cope with a temptation to smoke, only 49% of slip-abstainers, and 32% of relapsers actively resisted their initial return to smoking experience. Subject characteristics by level of smoking status are displayed in Table 1 (Appendix B).

A univariate ANOVA of the AVE scores of abstainers, slip-abstainers and relapsers was conducted in order to investigate the hypothesized group differences for the AVE variable. Although abstainers did not smoke, an "AVE" score

for their "most tempted experience" was computed for comparison purposes. The results indicated a significant difference between at least two of the three groups for the AVE variable. Scheffe's post-hoc pair-wise comparison revealed that the AVE score of relapsers was significantly higher than the AVE score of slip-abstainers and abstainers. The results also indicated that for the combined average of the responses on the four attributional dimensions, abstainers obtained an AVE score similar to that of slip-abstainers. The data are displayed in Table 2 (Appendix C).

Examination of the intercorrelations between the attributional dimensions in the current sample provided mixed support for combining all four dimensions into a single construct rating. While locus of causality was significantly correlated with globality ($r(149) = .30, p < .01$) and stability ($r(149) = .21, p < .01$), the correlation with controllability was not significant ($r(149) = .04, p > .05$). Intercorrelations between globality, stability, and controllability were also non-significant. Although the AVE was conceptualized as a combination of attributional dimensions, the lack of significant intercorrelations does not support the validity of creating a single AVE rating score. The present data suggested independent treatment of attributional dimensions (Schoeneman et al., 1988a, 1988b) in analyses of smoker's attributions of causality to be in order.

A multivariate one-way analysis of variance (MANOVA) was used to test the hypothesized differences between the groups on the four separate attributional dimensions (locus of causality, stability, globality, controllability) and the measure of postlapse/temptation guilt. The data are presented in Appendix C. Box's M test revealed the distribution of scores to be multivariate normal (Box's M = 29.90, $F(30, 64478) = .8521, p < .697$). The MANOVA revealed a significant group difference with the first root explaining 90.56% of the variance (GCR = .12702, $p < .05$). A post-hoc examination based on Roy's Union Intersection revealed significant group differences only for the variables of locus of causality and stability. For the dimension of locus of causality, the mean group score of relapsers was significantly higher (i.e., more internal) than that of abstainers and slip-abstainers. For the stability dimension, the mean group score of relapsers was significantly higher (i.e., more stable) than that of abstainers and slip-abstainers. No significant group differences were noted for the variables of globality, controllability, and postlapse guilt. A univariate examination of the differences in level of guilt reported between three periods of time since quitting revealed a non-significant decrease in reported guilt over time ($F(2, 120) = 1.27, p < .287$).

Interaction effects for levels of smoking status over time were hypothesized for the perceived control over smoking variable. The mean pre and postlapse/temptation control over smoking scores are presented in Table 3.

Table 3

Mean Control over Smoking Scores
by Smoking Status and Time

	Time	
	Prelapse	Postlapse
Abstainer	4.80 (SD = 1.55)	5.86 (SD = 1.40)
Slip-abstainer	4.62 (SD = 1.92)	4.84 (SD = 1.91)
Relapser	3.96 (SD = 1.97)	4.40 (SD= 1.90)

To examine the proposed interaction, a repeated measures 3 x 2 (Smoking status x Time) univariate ANOVA was performed with level of smoking status as the between-subjects factor, and pre and post lapse/temptation scores as the within-subjects factors (Data displayed in Table 4).

Table 4

Analysis of Variance Table for 3 x 2
(Smoking status x Time) ANOVA with Repeated
Measures on Perceived Control over Smoking Scores

Source	SS	MS	df	F-ratio
Between groups	653.30	4.51	145	
Smoking status (S)	68.20	34.10	2	7.57*
Within groups	271.71	1.87	145	
Time (T)	24.32	24.32	1	12.98**
S x T	9.21	4.61	2	2.46

** $p < .0005$

* $p < .001$

For the perceived control over smoking variable, a significant main effect was found for smoking status,

indicating group differences on the variable of perceived control over smoking. Post-hoc comparisons (Scheffe) found the mean perceived control over smoking score for abstainers to be significantly higher than the score obtained by relapsers. A significant main effect was also found for time, but the predicted smoking status by time interaction was not significant.

Interaction effects for levels of smoking status over time were also hypothesized for the perceived self-efficacy variable. The mean pre and postlapse/temptation self-efficacy scores are presented in Table 5.

Table 5

Mean Self-efficacy Scores
by Smoking Status and Time

	Time	
	Prelapse	Postlapse
Abstainer	5.08 (SD = 1.74)	5.84 (SD = 1.44)
Slip-abstainer	5.09 (SD = 1.72)	5.60 (SD = 1.72)
Relapser	3.60 (SD = 2.00)	3.61 (SD = 1.75)

A repeated measures 3 x 2 (Smoking status x Time) ANOVA was performed with level of smoking status and the between-group factor and the pre and post lapse/temptation scores as the within-groups factor. (Data displayed in Table 6).

Table 6

Analysis of Variance Table for 3 x 2
(Smoking status x Time) ANOVA with Repeated
Measures on Perceived Self-efficacy Scores

Source	SS	MS	df	F-ratio
Between groups	646.71	4.52	143	
Smoking status (S)	218.45	109.22	2	24.15**
Within groups	220.45	1.54	143	
Time (T)	13.52	13.52	1	8.77*
S x T	7.38	3.69	2	2.40

** $p < .0005$

* $p < .01$

The ANOVA revealed a significant main effect for smoking status, indicating group differences on the perceived self-efficacy variable. A post-hoc pair-wise comparison of means (Scheffe) revealed that both abstainers and slip-abstainers obtained a significantly higher mean self-efficacy score than relapsed smokers. A significant main effect was also demonstrated for time, but the predicted interaction of smoking status by time was not noted.

The attributional dimension variables were entered into a step-wise multiple discriminant function analysis to determine whether the four attributional dimensions would accurately predict outcomes for the three levels of smoking status. Of particular interest was determining whether or not inclusion of the attributional dimension of controllability variable would contribute significantly to the predictive ability of the three AVE variables as operationalized by Curry et al. (1985). The pre and postlapse/temptation self-efficacy and control over smoking

variables, as well as the postlapse/temptation guilt over smoking variable were also added to the analysis. These six variables were included to assess their relationship to the AVE variables and to determine how much they related to prediction of smoking status outcomes. Variables were selected for entry based on their ability to minimize the overall Wilk's lambda. It should be noted that three cases were dropped from the analysis as a result of a missing discriminating variable. The variables included in the step-wise analysis are shown in Table 7.

Table 7

Summary Table of Step-wise Discriminant Analysis Variables

Step	Variable	Wilk's Lambda*
1	Postlapse/temptation self-efficacy	.718
2	Stability dimension	.666
3	Postlapse/temptation control	.631
4	Locus of causality dimension	.611
5	Postlapse/temptation guilt	.597
6	Prelapse/temptation self-efficacy	.589

* All p's < .0005

The discriminant analysis yielded two significant discriminant functions which maximized the differences among the three groups. The overall function was significant ($p < .0005$) and accounted for 42% of the total variance explained. The first function discriminated relapsers from the other groups and accounted for 87% of the discriminating variance. The second function discriminated abstainers from the other groups and accounted for 13% of the discriminating variance. The overall discriminant function correctly classified 35 of 51 abstainers (69%), 21 of 43 slip-

abstainers (49%), and 37 of 52 relapsers (71%), for a total of 64% correct classification. The classification summary is displayed in Table 8. Examination of the slip-abstainer group revealed that 16 cases (37%) were incorrectly classified as abstainers and 6 cases (14%) were incorrectly classified as relapsers. The ratio of slip-abstainers misclassified as abstainers versus slip-abstainers

Table 8

Classification Results

<u>Actual Group</u>	<u>No. of Cases</u>	<u>Predicted Group Membership</u>		
Abstainer (1)	51	(1) 35 69 %	(2) 9 17 %	(3) 7 14 %
Slip-abstainer (2)	43	(1) 16 37 %	(2) 21 49 %	(3) 6 14 %
Relapser (3)	52	(1) 5 10 %	(2) 10 19 %	(3) 37 71 %

Percent of "grouped" cases correctly classified: 64%

misclassified as relapsers was nearly to 3:1.

Examination of the group means of the canonical discriminant functions (group centroids) revealed that for the first function (87% discriminating variance) the group means for abstainers and slip-abstainers were both positive and nearly equal, while the group mean for relapsers was negative. For the second function (13% discriminating variance), however, the group means of slip-abstainers and relapsers were both negative while the group mean of abstainers was positive. Table 9 displays the canonical discriminant functions evaluated at group means (group

centroids). Consequently, on the first function (i.e., the linear combination of variables with the largest ratio of

Table 9

Canonical Discriminant Functions Evaluated
at Group Means (Group Centroids)

Variable	Function 1(a)	Function 2(b)
Abstainer	0.52589	0.53167
Slip-abstainer	0.50833	-0.24293
Relapser	-0.93613	-0.32056

(a) Discriminates relapsers from other groups.

(b) Discriminates abstainers from other groups.

between-groups sum of squares to within-groups sum of squares) abstainers and slip-abstainers closely resembled each other, and both groups clearly differed from relapsers. On the second function, slip-abstainers more closely resembled relapsers than abstainers.

The finding that the AVE variables discriminated less well between abstainers and slip-abstainers than between slip-abstainers and relapsers was also indicated from preliminary univariate tests ($p < .05$) which revealed that for the AVE variables selected for inclusion into the discriminant analysis, abstainers and slip-abstainers differed significantly on one variable while both abstainers and slip-abstainers differed significantly from relapsers on six of nine variables. It appeared from the discriminant analysis that the AVE variables selected for analysis provided a better prediction of two rather than three possible outcomes for recently quit smokers, namely, that of smoking and nonsmoking. Consequently, I felt a formal test

of whether or not the AVE variables were significant predictors of smoking versus nonsmoking outcomes was in order.

The abstinent and slip-abstinent groups were collapsed to create a single classification of "nonsmokers", and the relapsed group was reclassified as "smokers". The same AVE variables were again entered into a step-wise discriminant function analysis with variables selected for entry based on their ability to minimize the overall Wilk's lambda. Although for this analysis the nonsmoker group (n = 96) was nearly twice the size of the smoker group (n = 52), assumptions of normality necessary for the linear discriminant function to be "optimal" were not violated. The distribution of the variables appeared to be a multivariate normal one and Box's M test revealed the group covariances to be equal (Box's M = 5.32, $F(10, 52376.9) = .51418$, $p < .881$). The variables included in the step-wise analysis are displayed in Table 10.

Table 10
Summary Table of Step-wise Discriminant Analysis Variables

Step	Variable	Wilk's Lambda*
1	Postlapse/temptation self-efficacy	.720
2	Stability dimension	.680
3	Locus of causality dimension	.658
4	Postlapse/temptation guilt	.650

* All p's < .0005

The discriminant analysis yielded a function which significantly discriminated smokers from nonsmokers ($p < .0005$), and explained 35% of the total variance. The

discriminant function correctly classified 77 of 96 (80%) nonsmokers and 42 of 52 (81%) of smokers for an overall correct classification of 80%. Table 11 displays the classification summary. The standardized canonical

Table 11

Classification Results

Actual Group	No. of Cases	Predicted Group Membership	
Nonsmoker (1)	96	(1) 77 80%	(2) 19 20%
Smoker (2)	52	(1) 10 19%	(2) 42 81%

Percent of "grouped" cases correctly classified: 80%

discriminant coefficients displayed in Table 12 and canonical discriminant function means (group centroids) shown in Table 13 illustrate the magnitude of the coefficients for the four variables included into the step-wise analysis and the group means for the function.

Table 12

Standardized Canonical Discriminant Function Coefficients

Variable	Function 1(a)	Nonsmoker(M)	Smoker(M)
Locus of causality	-0.32	3.59	4.69***
Stability	-0.37	3.21	4.25**
Postlapse self-eff.	0.87	5.73	3.62****
Postlapse guilt	0.19	3.46	3.37

(a) Discriminates nonsmokers from smokers, Wilk's-lambda = .650, Chi-squared(4) = 61.16, $p < .0005$.

**** $p < .0005$

*** $p < .001$

** $p < .01$

Table 13
 Canonical Discriminant Function Evaluated
 at Group Means (Group Centroids)

Variable	Function 1
Nonsmoker	0.54201
Smoker	-0.97979

Note that the sign of the coefficients is arbitrary and simply shows a contrast in variable values between the two groups. The coefficients indicated that smokers differed significantly from nonsmokers in having more internal and stable causal attributions coupled with lower levels of postlapse self-efficacy. Group means for the locus of causality and stability variables were higher for smokers than for nonsmokers. The mean group scores for postlapse/temptation self-efficacy and guilt variables were higher for nonsmokers than for smokers.

The variable with the largest standardized coefficient and which clearly contributed the most to the discriminant function was postlapse/temptation self-efficacy. The contributions of locus of causality and stability to the function were nearly equal, and the contribution of postlapse/temptation guilt was negligible. The step-wise analysis did not select the attributional variables of controllability and globality for inclusion in the analysis due to their inability to significantly discriminate between groups. Because significant intercorrelations existed between the variables of prelude control over smoking and

prelapse self-efficacy ($r(148) = .57, p < .01$), and postlapse control over smoking and postlapse self-efficacy ($r(146) = .50, p < .01$) only postlapse/temptation self-efficacy was allowed to enter the analysis.

Since the magnitude of the standardized coefficients are affected by intercorrelations among the variables, the within groups correlations (i.e., bivariate correlations between the variables and the discriminant function) were also used to interpret the discriminant function (Horwitz, Hindi-Alexander, & Wagner, 1985). Examination of the within groups correlations presented in Table 14 revealed that

Table 14

Pooled Within Groups Correlations Between Discriminating Variables and Canonical Discriminant Functions

Variable	Function 1
Postlapse self-efficacy	0.84961
Prelapse self-efficacy	0.43000
Locus of causality	-0.38817
Postlapse control	0.34696
Stability	-0.34517
Globality	-0.21910
Prelapse control	0.19817
Controllability	-0.09807
Postlapse guilt	0.03042

Note: Variables are ordered by size of correlation within the function.

nonsmokers possessed higher levels of pre and postlapse/temptation self-efficacy and pre and postlapse/temptation control over smoking, as well as more postlapse/temptation guilt. The attributions of smokers were more internal, stable, global, and uncontrollable than those of nonsmokers. The variable of postlapse/temptation

self-efficacy correlated most strongly with the discriminant function, and the variable of pre-lapse/temptation self-efficacy had the second highest correlation. Less strongly correlated were the variables of locus of causality, post-lapse/temptation control over smoking, and stability. The dimensions of globality and controllability were two of the four attributional variables which correlated least strongly with the discriminant function. These data and those from the MANOVA indicated that only two of the four proposed AVE attributional dimensions discriminated between levels of smoking status and were significantly predictive of relapsed outcomes.

CHAPTER 4

Discussion

The finding that two-thirds of recently quit smokers resumed smoking within 90 days of quitting illustrated the need to investigate and identify the factors associated with the postquit or maintenance phase of quitting smoking. As social psychological researchers have persuasively argued, the return to smoking or "relapse" may be better understood as process of cognitive and behavioral events which culminates in smoking, rather than as a simple discrete event associated only with biological craving (Marlatt et al., 1973, Marlatt & Gordon, 1985). Of particular interest were the cognitive and behavioral factors associated with the initial return to smoking experience or "lapse". It was proposed that these factors likely determined whether or not an ex-smoker was able to recover from a lapse or would continue smoking and completely relapse.

One of the more comprehensive and influential models of addiction and relapse was recently proposed by Marlatt and Gordon (1980, 1985). This social learning model postulated that the likelihood of continued smoking versus recovery of abstinence, depended in large measure on the types of causal attributions made for the initial return to smoking experience, and the subsequent affective reaction to those attributions. This cognitive-affective reaction labeled the Abstinence Violation Effect (AVE) was posited as an

immediate link between an initial lapse and full-blown relapse. According to their relapse model, internal, stable, global, and uncontrollable causal attributions for a lapse were believed to be associated with a negative affective reaction and a loss of perceived self-efficacy and control over smoking. Conversely, external, unstable, specific, and controllable causal attributions for a lapse were believed to be associated with a lessened negative affective response, and little or no loss of self-efficacy or control over smoking.

The AVE construct was operationalized by Curry et al. (1987) who demonstrated that the AVE score (a combination of locus of causality, globality, and stability ratings) significantly predicted relapse. Curry et al. did not, however, include a measure of the attributional dimension of controllability, an important component of the AVE model, in their operationalization of the AVE. In addition, they did not assess the level of self-efficacy associated with either relapse or recovery of abstinence following a lapse. I believed inclusion of these variables would further refine the operationalization of the AVE construct, and significantly strengthen its ability to predict smoking outcomes. Of additional interest was validation of the AVE construct with a large sample of quitters who have quit smoking without formal smoking treatment. While self-quitting is the method practiced by 90% of smokers who quit

(American Cancer Society, 1986), the factors associated with self-quitting have received surprisingly little research attention as opposed to studies which have investigated outcomes of formal smoking treatment methods. The current study assessed the four attributional dimensions of causality with a sample of recently self-quit abstainers, slip-abstainers and relapsed smokers. Other variables related to the AVE such as self-efficacy, control over smoking, and negative affect were also assessed and their relationship to the AVE and prediction of smoking outcomes examined.

When operationalized as a combination of the attributional dimensions of locus of causality, globality, stability, and controllability, subjects who relapsed within 120 days of quitting smoking reported a significantly stronger AVE reaction than quitters who lapsed and returned to abstinent or near abstinent levels of smoking (i.e., two or less occasions weekly). This supported the predictions of the Marlatt and Gordon (1985) relapse model as well as the findings of Curry et al. (1987). The AVE was also demonstrated to be a cognitive-affective reaction significantly predictive of relapse in a sample of recently self-quit smokers. This conclusion, however, was not without qualifications, as examination of the contribution of the four separate attributional dimensions to the prediction of relapse revealed.

The analysis of the attributional variables demonstrated that only the dimensions of locus of causality and stability were significantly related to prediction of smoking outcomes. The dimensions of controllability and globality did not differentiate between levels of smoking status and did not contribute to the overall ability of the AVE measure to correctly classify quitters as to potential smoking outcomes. It is possible that the AVE construct may be better operationalized as a combination of two rather than four attributional dimensions of causality, namely the dimensions of locus of causality and stability. This conclusion of course would require replication of my results in future studies of smoking cessation and attributions.

The findings regarding the hypothesized causal attributions of the three groups revealed that the attributions of relapsers were significantly more internal and stable, and slightly more global and uncontrollable than those of abstainers and slip-abstainers. Abstainers and slip-abstainers made more external, unstable, slightly less global, and more controllable attributions than relapsers. The relationship between recovery of abstinence and an external locus of causality supported the distinction between "good" external and "bad" internal attributions proposed by Marlatt and Gordon (1980, 1985), and demonstrated by Curry et al. (1987) and O'Connell and Martin (1987). The importance of the locus of causality dimension

in prediction of outcomes had been challenged by Schoeneman et al. (1988b) who suggested that both "characterological" (internal, stable, global, uncontrollable) and "behavioral" (internal, unstable, specific, controllable) self-blame were internal causes. The significance of the locus of causality dimension in prediction of relapse was clearly supported in the current study.

With the exception of perceiving the cause of their smoking to be controllable by them, the attributions of relapsed smokers reflected more "characterological" self-blame than the attributions of abstainers and slip-abstainers. In my study, the "behavioral" self-blame of abstainers and slip-abstainers consisted of external, unstable, global, and controllable causes. As stated earlier, my objective was not to argue that a definition of behavioral self-blame should include external rather than internal causal attributions, but rather, to operationalize and attempt to validate the AVE model proposed by Marlatt and Gordon (1980, 1985). The emphasis on external versus internal attributions should not be interpreted as an attempt to shift blame or responsibility for the behavior away from the individual. Instead, making external attributions for failures may serve to direct the quitter to attribute responsibility for a smoking "slip" to more controllable, avoidable behavioral causes (such as a lack of

specific coping skills in a high risk situation). As Janoff-Bulman (1979, p. 1800) succinctly stated,

"Individuals who engage in behavioral self-blame are apt to have an eye towards the future and what they can do to avoid a recurrence of the negative outcome... Individuals who engage in characterological self-blame are apt to focus more on the past and what it was about them that rendered them deserving of the negative outcome for which they are blaming themselves."

In addition to attributing smoking to internal causes, relapsers also believed causes to be stable and unchanging over time, while abstainers and slip-abstainers perceived causes to be unstable and/or variant over time. This was consistent with the AVE model and the findings of Curry et al. (1987) which concluded that internal attributions for relapses are likely associated with such perceived stable causes as lack of ability, lack of willpower, or a perception of quitting as difficult or impossible. Conversely, external attributions are likely consistent with such perceived unstable causes for smoking as having a bad day, experiencing bad luck, or succumbing to peer pressure. Again, the stability dimension was demonstrated to be a significant predictor of potential relapse in recent quitters.

The finding that the groups did not significantly differ on the dimension of globality was less clearly

accounted for. Though abstainers and slip-abstainers rated their causes as less global than relapsers, their average ratings were still on the global rather than specific side of the continuum. This indicated that while abstainers and slip-abstainers perceived the cause of their temptation or lapse to be external to themselves as well as unstable over time, they still perceived it to be global and present in many different situations or areas in their lives; rather than specific to or related only to the original smoking or tempted situation. More simply stated, these quitters believed that the cause of their return to smoking existed outside of themselves, varied over time, but not across settings (e.g., "I had a lousy day and smoked"). The belief that smoking behavior can be associated with possibly numerous high-risk situations or settings which vary according to the time of day or week in their potential for promoting smoking appears to be logical.

Another possible explanation was that the global-specific distinction may not be a salient property of an individual's search for smoking causes. Weiner (1985, p. 555) concluded that, "Globality might be a basic property of causes, but more evidence is needed before this possibility is accepted". Examination of the globality dimension ratings for relapsers and slip-abstainers reported by Curry et al. (1987) revealed a similar nonsignificant difference between groups on this dimension. The present study

demonstrated that this dimension did not contribute significantly to the operationalization of the AVE or prediction of smoking outcomes. It may be that this dimension, proposed by Abramson et al. (1978) as orthogonal to the locus of causality and stability factors, does not reliably differentiate between different levels of smoking status. It is also possible that my instrument was not sufficiently sensitive to this effect to quantify it. Additional research is needed to determine the reliability and significance of the globality dimension as an attributional dimension relevant to the cognitive assessment of smokers.

All three groups of smokers reported that the cause or reason for their temptation or smoking lapse was nearly equally controllable by them, with abstainers and slip-abstainers indicating slightly more control than relapsers. That relapsed smokers perceived the cause of their smoking lapse to be controllable rather than uncontrollable was an interesting albeit unexpected finding. In the only other smoking study which included assessment of the controllability dimension, Schoeneman et al. (1988a) reported a similar pattern of controllable attributions for similar types of outcomes. It seemed in both studies that relapsed smokers attempted to maximize their perception of control over their smoking behavior, and may have been reluctant or unwilling to concede that they had little or no control over

whether or not they smoked. While the current findings supported the results of Schoeneman et al., they ran contrary to Marlatt and Gordon's contention that internal, stable, and global attributions are necessarily associated with uncontrollable causal attributions. In spite of the fact that relapsers apparently blamed smoking on more characterological than behavioral causes, they still perceived a strong sense of personal volition in their reasons for smoking. Finally, if relapsed smokers perceived the cause of their return to smoking as controllable, it is conceivable that a return to smoking episode would be associated with a minimal negative affective reaction, and little or no loss of self-efficacy and control over smoking. As seen later in this discussion the present findings with regards to relapsed smokers are consistent with such a cognitive-affective reaction.

It was proposed by Marlatt and Gordon (1980, 1985) that an increase of self-efficacy and control over smoking would be associated with causal attributions that were external, unstable, specific and controllable. The current study demonstrated that following a strong temptation to smoke, abstainers made external, unstable, global, and controllable attributions, and experienced an increase in self-efficacy and control over smoking. Of the three groups, abstainers experienced the largest increase over time for both self-efficacy and control over smoking, and obtained the highest

postlapse/temptation levels of both factors as well. Evidence from Shiffman (1984) had indicated that highly tempted abstainers would experience a loss of self-efficacy following a resisted temptation to smoke, but the current sample of abstainers failed to demonstrate this. Rather, my results and those of Garcia et al. (1990) support the rationale of the Marlatt and Gordon (1980, 1985) relapse model.

The hypothesis that a strong negative affective reaction would be associated with relapse, and that recovery of abstinence and/or resisting a temptation to smoke would result in less guilt was not supported. It was apparent that quitters in all three groups experienced little guilt associated with either smoking or being strongly tempted to smoke. While this finding may have contradicted the proposed negative affective component of the AVE, several other explanations warrant consideration. The first concerns the influence of the attributional dimension of controllability on the type and magnitude of any subsequent affective reactions. It seems likely that relapsed smokers who perceived themselves as having control over the cause of their initial return to smoking, would also experience no loss of self-efficacy and control over smoking, and little or no negative affective reaction. Perceived volition of behavior may be significantly instrumental in modulating subsequent affective responses to a smoking episode.

Another consideration involved the decision to assess guilt as the one measure of negative affect. Considering the composite of possible negative affects (e.g., guilt, self-blame, depression, dysphoria, hopelessness, shame, anger) potentially associated with characterological self-blame, it may be that other affective responses such as depression or self-blame were more salient and possibly more deeply felt affective responses. Assessment of a cluster of such negative reactions rather than any one in particular may have provided stronger evidence for or against the negative affect component of the AVE. For instance, Schoeneman et al. (1988) found that a sample of smokers (i.e., relapsed + never quit smokers) reported more anger, depression, disappointment, disgust, fear, frustration, guilt, sadness, upset, and worry than a sample of nonsmokers (i.e., abstinent + slip-abstinent quitters).

A third consideration concerns assessment of an affective response up to four months after it was experienced. While I predicted that recollection of cognitions and affect would be accurate over time, it may have been that when affective reactions were retrospectively recollected as cognitions, their potency was lessened. Marlatt (1985b, p.168) emphasized the need for "immediate assessment of self-image changes since self-criticism may be followed by attempts to reduce self-blame." Brandon et al. (1990, p. 110) followed-up quitters for 24 months post-

treatment and reported that only half of quitters in their sample, "recalled any affective reaction to the lapse". A post-hoc examination of the level of guilt reported over three temporal categories demonstrated that the level of guilt reported 30 to 90 days postlapse ($M = 3.40$) was only slightly less than that reported 1 to 7 days postlapse ($M = 3.76$). Recently relapsed smokers did not retrospectively recall feeling significantly more guilty than those who relapsed up to three months later. It does not appear then that the low level of guilt recollected at assessment resulted from an attempt to minimize recollected guilt or reduce self-blame.

The finding of no significant interaction effect between levels of smoking status over time for the control over smoking variable appeared to have resulted from the ratings of relapsed smokers. As expected the control over smoking score for abstainers and slip-abstainers increased following a lapse/temptation, but contrary to my expectation, relapser's scores increased slightly rather than decreased. That relapsed smokers report feeling just as much in control after a lapse as before contradicted the predictions of Marlatt and Gordon (1980, 1985), but supported the finding of Curry et al. (1987). As mentioned earlier, Curry et al. reported that relapsed smokers in their sample experienced no change in perceived control over smoking following a lapse. It was speculated earlier that

subsequent to making controllable causal attributions for their smoking behavior, relapsers experienced no loss of control over smoking. Since my study was the first to assess the attributional dimension of controllability together with perceived control over smoking, further evidence to support this conclusion is needed.

The finding of no significant interaction between levels of smoking status over time for the self-efficacy variable appeared to have also resulted from the unexpected ratings given by relapsers. As predicted, abstainers reported the highest level of postlapse/temptation self-efficacy, and experienced the largest increase of self-efficacy over time. The self-efficacy of slip-abstainers rose slightly as expected. Surprisingly, relapsers reported no change of self-efficacy following their initial return to smoking experience. It may be, as with the control over smoking variable, that the unchanged self-efficacy was associated with relapsers perceiving the cause of their smoking as controllable rather than uncontrollable. It is of interest to note that the level of prelapse self-efficacy (but not prelapse control over smoking) of relapsers was significantly lower than that of abstainers and slip-abstainers. This low level of prelapse self-efficacy was a salient factor in determining the potential for smoking outcomes among the three groups. When assessed with postlapse self-efficacy, the level of prelapse self-efficacy

was a less powerful though still significant predictor of outcomes. The finding that postlapse self-efficacy was the variable most strongly related to prediction of abstinent versus smoking outcomes confirmed what a growing body of research has demonstrated; namely, that people's estimates of confidence in their future behaviors are among the best predictors of future smoking outcomes. Future attempts to operationalize the AVE reaction or to predict smoking outcomes should include assessment of this important cognitive variable.

The most noteworthy unhypothesized finding concerned the notable similarities between abstainers and slip-abstainers on most demographic, cognitive, and affective variables, a finding logically consistent with the Marlatt and Gordon (1980, 1985) relapse model. While it was expected that these groups would respond in similar directions on most of the variables assessed, the similarity in the magnitude of responses was surprising. Slip-abstainers reported cognitive-affective reactions to smoking very similar to the reactions of abstainers who were tempted to smoke; so similar in fact that the present AVE variables were unable to accurately discriminate between slip-abstainers and tempted abstainers. It would have been interesting to determine whether slip-abstainers perceived themselves as "smokers" or "ex-smokers". The only significant difference found between the two groups was that

while 80% of abstainers actively attempted to cope with a temptation to smoke, less than half the sample of slip-abstainers did so. Paradoxically, while regulating their smoking to abstinent or near abstinent levels, "slippers" did not appear to actively resist an urge to smoke. Indeed it is ironic that relapsed smokers tried harder than slip-abstainers to resist smoking that initial postquit cigarette. It appears that slip-abstainers are at a transition point between total quitting and continued smoking; behaving for the most part as ex-smokers, but allowing themselves to smoke (apparently guilt free) once in a while. This provides more evidence that quitting smoking can best be conceptualized as a dynamic process rather than simply a dichotomous event (Cohen et al., 1989). It is believed that continued follow-up of this sample of quitters would provide valuable data relevant to the factors determining whether these quitters go on to complete abstinence or return to prior levels of smoking.

Other unhypothesized findings of interest involved significant group differences on several key demographic variables. Although relapsed smokers were significantly older and smoked more cigarettes daily prior to quitting than abstainers and slip-abstainers, they did not smoke longer or make significantly more prior attempts to quit than other quitters. These findings are partially at odds with the traditional portrait of the highly-addicted chronic

relapser as being older, smoking heavily and for many years, and failing at numerous attempts to quit. My sample of relapsed smokers smoked for fewer years and did not have a long history of failed attempts at quitting; two indicators generally associated with college age smokers as well as positive outcomes for quitting. Although this University sample of recent quitters was comprised of nearly two-thirds women, the composition of gender was consistent with recent national samples of persons attempting to quit smoking unassisted (Cohen et al., 1989). The gender ratio reflects the current trend for women to be more concerned with health and health practices than men; however, no significant gender differences were noted for any of the AVE or demographic variables assessed. The finding that 96% of the sample had not previously tried formal smoking treatments may reflect more than just the youth of college age smokers. It may also be indicative of the preponderance of self-quitting methods over those which involve formal treatment. As stated earlier, some potential quitters may resist obtaining formal smoking treatment for numerous reasons, including the possible stigmatizing effect of obtaining "medical treatment". Likewise, the monetary costs associated with many formalized smoking cessation programs, as well as their potentially limited accessibility may all factor into why the current "treatment of choice" is quitting with without treatment.

Methodological issues

An unexamined factor which may have influenced whether or not quitters were able to succeed in maintaining abstinence or recover from a lapse, could have been quitter's perceived dependence on nicotine. Quitters who rate themselves as highly physically addicted to nicotine appear to be more prone to earlier relapse than less addicted smokers who attempt to quit (Shiffman, 1982). The finding that the average relapser in my study smoked more cigarettes prior to quitting (17/day vs. 10/day) and lapsed quicker than slip-abstainers (7 to 30 days vs. 30 to 90 days) may be indicative of a stronger dependence on nicotine. While acknowledging this possibility, the findings of two recent studies described below question the putative influence of withdrawal symptoms and nicotine dependence on the relapse process.

A recent study investigated the influence of cigarette withdrawal on relapse and examined the strength of reported withdrawal symptoms experienced by heavy and light smokers (Cummings, Giovino, Jaen, & Emrich, 1985). The authors found that on nine withdrawal symptoms reported by recently quit heavy and light smokers, heavy smokers reported significantly stronger reactions than light smokers on only one symptom (irritability). They also concluded that the greatest decrease in withdrawal symptoms for all smokers occurred during the first week post quit. In another study,

Katz and Singh (1986) reported that relapsed smokers rated withdrawal symptoms as contributing less to relapse than to prevention of the initial attempt to quit. While nicotine dependence may have had a role in the relapse process, it is not believed to have been as salient a factor as the AVE reaction. However, since the influence of perceived dependence on nicotine and related withdrawal symptoms on the relapse process was not assessed, confidence in our conclusions must be tempered. Future studies would do well to include specific measures of precessation behavioral indices of nicotine dependence and withdrawal (Brownell et al., 1986).

One potential confound exists in the data collection method of assessing pretemptation and prelapse self-efficacy and perceived control after determination of the crisis outcome. Relapsed smokers, for example, had prelapse self-efficacy scores which were significantly lower than those of abstainers and slip-abstainers. It is believed that relapsed smokers prior to smoking felt less confident in their estimations of future abstinence, and did not report feeling so because they happened to be smoking at the time of assessment. It seems logical that had this finding been an artifact of the data collection method used, the recollected level of control over smoking would have also been significantly lower when retrospectively reported, and this did not occur. Prospective assessment of these

variables would have obviated such questions involving accuracy of recall.

In addition, since this was a somewhat naturalistic sample of smokers who attempted to quit on their own during the past several months, there was no controlling for the variability in quitting methods employed. "Self-quitting" may, in fact, been aided by exposure to health related information (Prochaska, Velicer, DiClemente, & Fava, 1988). The specific types of methods used may have been important considerations in determining the success or failure in quitting. Efforts to quit may be negatively impacted by the ineffectiveness of the quitting method employed as well as the cognitive-affective reactions accompanying the initial return to smoking episode. Future assessments should examine the relationship of specific methods used, including exposure to stop-smoking and health literature, to the types of attributions given for success or failure in quitting. Other related variables to consider might include assessment of motivation, commitment, as well as energy invested in quitting.

Summary and Recommendations

I believe that these findings contribute some new and significant information to what is currently understood about the critical period of days and weeks following cessation of smoking. My investigation resulted in mixed support for the construct of the Abstinence Violation Effect

as presently postulated by Marlatt and Gordon (1980, 1985). While the validity of the attributional dimensions of locus of causality and stability as salient determinants of relapse was demonstrated, the contribution of the dimensions of globality and controllability in determining outcomes was not. Also not supported was the postulated negative affective response believed to accompany a return to smoking experience. I concluded that smokers who perceived themselves in control of the cause or reason for smoking did not experience reactions of guilt, or a loss of self-efficacy and control over smoking. This conclusion of course, requires replication and further support. Though not fully demonstrated and needing further refinement, the AVE construct holds promise as an important cognitive-affective reaction associated with relapse. Additional research is necessary, however, and should investigate the various cognitive and affective reactions of relapsed smokers, with specific attention directed to the role that perceived controllability of causes might play in efforts to quit smoking.

Not surprising was the finding that self-efficacy emerged as the most significant variable in predictions of future smoking behavior. Future assessment of relapse determinants such as the AVE should include assessment of this important cognitive variable. While abstainers and slip-abstainers appear remarkably similar in many ways, it

is apparent that slip-abstainers still consider occasional smoking as acceptable. As recommended earlier, this particular group of quitters warrants further investigation and follow-up to identify the factors involved in determining which of these quitters continue to remain abstinent and which fully relapse. It is clear that among the University population as with the smoking population at large, self-quitting is the method of choice for smoking cessation. I believe that further research of self-change of smoking will contribute meaningful as well as practical information with regards to the factors associated with success and failure of this population in quitting smoking.

In making the maintenance phase of smoking cessation a higher priority in research and treatment of smoking, the possible options for successful coping and recovery from slip-ups may be increased. The applicability of this research to treatment of smoking is clear; if cognitive and behavioral coping options are made increasingly available to quitters, potential slip-ups and relapses may be better avoided or at least more easily recovered from. Perhaps by providing quitters in the early part of a quit attempt with useful information on cognitive strategies and alternative behaviors, the less than impressive "success" rates currently associated with smoking cessation efforts will improve.

REFERENCES

- Abramson, L. Y., Garber, J., & Seligman, M. E. P. (1980). Learned helplessness in humans: An attributional analysis. In J. Garber and M. E. P. Seligman (Eds.), Human helplessness: Theory and application. New York: Academic Press.
- Abramson, L. Y., Seligman, M. E. P., & Teasdale, J. (1978). Learned helplessness in humans: Critique and reformulation. Journal of Abnormal Psychology, 87, 49-74.
- American Cancer Society (1986). Cancer facts and figures. New York: Author
- Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. Psychological Review, 84, 191-215.
- Baer, J. S., & Lichtenstein, E. (1988). Classification and prediction of smoking relapse episodes: An exploration of individual differences. Journal of Consulting and Clinical Psychology, 56(1), 104-110.
- Borland, R. (1990). Slip-ups and relapse in attempts to quit smoking. Addictive Behaviors, 15(3), 235-245.
- Bradley, G. W. (1978). Self-serving biases in the attributional process: A reexamination of the fact or fiction question. Journal of Personality and Social Psychology, 36(1), 56-71.
- Brandon, T. H., Tiffany, S. T., Obremski, K. M., & Baker, T. B. (1990). Postcessation cigarette use: The process of relapse. Addictive Behaviors, 15, 105-114.
- Breteler, R. M. H., Rombouts, R., & van der Staak, C. P. F. (1988). Smoking cessation studies: a methodological comparison. International Journal of the Addictions, 23(12), 1297-1309.
- Brownell, K. D., Marlatt, G. A., Lichtenstein, E., & Wilson, G. T. (1986). Understanding and preventing relapse. American Psychologist, 41, 765-782.
- Burt, D. W. (1974). Characteristics of the relapse situation of alcoholics treated with aversion conditioning. Behavior Research and Therapy, 12, 121-123.

- Cohen, S., Lichtenstein, E., Prochaska, J. O., Rossi, J. R., Gritz, E. R., Carr, C. R., Orleans, C. T., Schoenbach, V. J., Biener, L., Abrams, D., DiClemente, C. D., Curry, S., Marlatt, G. A., Cummings, K. M., Emont, S. L., Giovino, G., & Ossip-Klein, D. (1989). Debunking myths about self-quitting. American Psychologist, 44(11), 1355-1365.
- Condiotte, M. M., & Lichtenstein, E. (1981). Self-efficacy and relapse in smoking cessation programs. Journal of Consulting and Clinical Psychology, 49, 648-658.
- Cronkite, R., & Moos, R. (1980). The determinants of posttreatment functioning of alcoholic patients: A conceptual framework. Journal of Consulting and Clinical Psychology, 48, 305-316.
- Cummings, C., Gordon, J. R., & Marlatt, G. A. (1980). Relapse: Strategies of prevention and prediction. In W. R. Miller (Ed.), The addictive behaviors: Treatment of alcoholism, drug abuse, smoking and obesity. Oxford, U. K.: Pergamon Press.
- Cummings, K. M., Giovino, G., Jaen, C. R., & Emrich, L. J. (1985). Reports of smoking withdrawal symptoms over a 21 day period of abstinence. Addictive Behaviors, 10, 373-381.
- Curry, S. G., Marlatt, G. A., & Gordon, J. R. (1987). Abstinence violation effect: Validation of an attributional construct with smoking cessation. Journal of Consulting and Clinical Psychology, 55(2), 145-149.
- Dubbert, P. M., & Wilson, G. T. (1984). Goal-setting and spouse involvement in the treatment of obesity. Behavior Research and Therapy, 22, 227-242.
- Erickson, L. M., Tiffany, S. T., Martin, E. M., & Baker, T. B. (1983). Aversive smoking therapies: A conditioning analysis of therapeutic effectiveness. Behavioral Research and Therapy, 21, 595-611.
- Festinger, L. (1964). A theory of cognitive dissonance. Stanford, CA: Stanford University Press.
- Fisher, J. D., & Farina, A. (1979). Consequences of beliefs about the nature of mental disorders. Journal of Abnormal Psychology, 88, 320-327.
- Forsterling, F. (1985). Attributional retraining: A review. Psychological Bulletin, 98, 495-512.

- Garcia, M. E., Schmitz, J. M., & Doerfler, L. A. (1990). A fine grained analysis of the role of self-efficacy in self-initiated attempts to quit smoking. Journal of Consulting and Clinical Psychology, 58(3), 317-322.
- Garvey, A. J., Heinhold, J. W., & Rosner, B. (1989). Self-help approaches to smoking cessation: A report from the normative aging study. Addictive Behaviors, 14, 23-33.
- Goldstein, S., Gordon, J. R., & Marlatt, G. A. (1984, August). Attributional processes and relapse following smoking cessation. Paper presented at the American Psychological Association Convention, Toronto, Ontario, Canada.
- Gritz, E. R., Carr, C. R., & Marcus, A. C. (1988). Unaided smoking cessation: Great american smokeout and new year's day quitters. Journal of Psychosocial Oncology, 6(3/4), 217-237.
- Harackiewicz, J. M., Sansone, C., Blair, L. W., Epstein, J. A., & Manderlink, G. (1987). Attributional processes in behavior change and maintenance: Smoking cessation and continued abstinence. Journal of Consulting and Clinical Psychology, 55(3), 372-378.
- Harris, J. E. (1980). Patterns of cigarette smoking. In The health consequences of smoking for women: A report of the surgeon general. Rockville, MD: United States Public Health Service, Office on Smoking and Health.
- Heinhold, J. W., Garvey, A. J., Goldie, C., & Bosse', R. (1982). Retrospective analysis in smoking cessation research. Addictive Behaviors, 7, 347-353.
- Hore, B. D. (1971). Life events and alcoholic relapse. British Journal of Addiction, 66, 83-88.
- Horwitz, M. B., Hindi-Alexander, M., & Wagner, T. J. (1985). Psychosocial mediators of abstinence, relapse, and continued smoking: A one-year follow-up of a minimal intervention. Addictive Behaviors, 10, 29-39.
- Hunt, W. A., Barnett, L. W., & Branch, L. G. (1971), Relapse rates in addiction programs. Journal of Clinical Psychology, 27, 455-456.
- Janoff-Bulman, R. (1979). Characterological versus behavioral self-blame: Inquires into depression and rape. Journal of Personality and Social Psychology, 37, 1798-1809.

- Jellinek, E. M. (1960). The disease concept of alcoholism. New Brunswick, N. J.: Hillhouse Press.
- Katz, R. C., & Singh, N. N., (1986). Reflections on the Ex-smoker: Some findings on successful quitters. Journal of Behavioral Medicine, 9(2), 191-201.
- Klesges, R. C., Myers, A. W., Klesges, L. M., & LaVasque, M. E. (1989). Smoking, body weight and their effects on smoking behavior: A comprehensive review of the literature. Psychological Bulletin, 106(2), 204-230.
- Laws, D. R. (1989). (Ed.), Relapse prevention with sex offenders. New York, NY: Guilford Press.
- Levanthal, H., & Cleary, P. D. (1980). The smoking problem: A review of the research and theory in behavioral risk modification. Psychology Bulletin, 88, 370-405.
- Lichtenstein, E., Antonuccio, D. O., & Rainwater, G. (1977, April). Unkicking the habit: The resumption of cigarette smoking. Paper presented at the annual meeting of the Western Psychological Association, Seattle, WA.
- Marlatt, G. A. (1985a). Relapse prevention: Theoretical rationale and overview of the model. In G. A. Marlatt and J. R. Gordon (Eds.), Relapse Prevention: Maintenance strategies in the treatment of addictive behaviors. New York: Guilford Press.
- Marlatt, G. A. (1985b). Cognitive factors in the relapse process. In G. A. Marlatt and J. R. Gordon (Eds.), Relapse Prevention: Maintenance strategies in the treatment of addictive behaviors. New York: Guilford Press.
- Marlatt, G. A., Baer, J. S., Donovan, D. M., & Kivlahan, D. R. (1988). Addictive Behavior: Etiology and treatment. Annual Review of Psychology, 39, 223-252.
- Marlatt, G. A., Demming, B., & Reid, J. B. (1973). Loss of control drinking in alcoholics: An experimental analogue. Journal of Abnormal Psychology, 81, 223-241.
- Marlatt, G. A., Curry, S., & Gordon, J. R. (1988). A longitudinal analysis of unaided smoking cessation. Journal of Consulting and Clinical Psychology, 56(5), 715-720.

- Marlatt, G. A., & Gordon, J. R. (1980). Determinants of relapse: Implications for the maintenance of behavior change. In P. O. Davidson & S. M. Davidson (Eds.), Behavioral medicine: Changing health lifestyles. New York: Brunner/Mazel.
- Marlatt, G. A., & Gordon, J. R. (Eds.), (1985). Relapse prevention: Maintenance strategies in the treatment of addictive behaviors. New York: Guilford Press.
- Marlatt, G. A., & Rohsenow, D. J. (1980). Cognitive process in alcohol use: Expectancy and the balanced-placebo design. In N. K. Mello (Ed.), Advances in substance abuse: Behavioral and biological research. (Vol. 1). Greenwich, CT: JAI Press.
- McAlister, A. (1975). Helping people quit smoking: Current progress. In A. M. Enelow and J. B. Henderson (Eds.), Applying Behavioral Science to Cardiovascular Risk. New York: American Heart Association.
- Mermelstein, R., & Lichtenstein, E. (1983, May). Slip vs. relapse in smoking cessation: A situational analysis. Paper presented at the meeting of the Western Psychological Association, Los Angeles.
- O'Connell, K. A., & Martin, E. J. (1987). Highly tempting situations associated with abstinence, temporary lapse, and relapse among participants in smoking cessation programs. Journal of Consulting and Clinical Psychology, 55(3), 367-371.
- O'Leary, A. (1985). Self-efficacy and health. Behavior Research and Therapy, 23(4), 437-451.
- O'Malley, P. M., Bachman, J. G., & Johnston, L. D. (1983). Reliability and consistency of self-reports of drug use. The International Journal of the Addictions, 18(6), 805-824.
- Ossip-Klein, D. J., Bigelow, G., Parker, S. R., Curry, S., Hall, S., & Kirkland, S. (1986). Classification and assessment of smoking behavior. Health Psychology, 5(Suppl.), 3-11.
- Pettiti, D. B., Friedman, G. D., & Kahn, W. (1981). Accuracy of information on smoking habits provided on self-administered research questionnaires. American Journal of Public Health, 71, 308-311.

- Prochaska, J. O., & DiClemente, C. C. (1983). Stages and processes of self-change of smoking: Toward and integrative model of change. Journal of Consulting and Clinical Psychology, 5, 390-395.
- Prochaska, J. O., Velicer, W. F., DiClemente, C. C., & Fava, J. (1988). Measuring processes of change: Applications to the cessation of smoking. Journal of Consulting and Clinical Psychology, 56(4), 520-528.
- Rzewnicki, R., & Forgays, D. G. (1987). Recidivism and self-cure of smoking and obesity: An attempt to replicate. American Psychologist, 42, 97-100.
- Schachter, S. (1982). Recidivism and self-cure of smoking and obesity. American Psychologist, 37(4), 436-444.
- Schwartz, J. L. (1987). Review and evaluation of smoking cessation methods: The U. S. and Canada, 1978-1985 (DHHS Publication No.87-2940). Washington, DC: U. S. Government Printing Office.
- Schoeneman, T. J., Stevens, V. J., Hollis, J. F., Cheek, P. R., & Fisher, K. (1988a). Attribution, affect, and expectancy following smoking cessation treatment. Basic and Applied Social Psychology, 9(3), 173-184.
- Schoeneman, T. J., Hollis, J. F., Stevens, V. J., Fischer, K., & Cheek, P. R. (1988b). Recovering stride versus letting it slide: Attributions for "slips" following smoking cessation treatment. Psychology and Health, 2, 335-347.
- Schunk, D. H. (1983). Ability versus effort attributional feedback: Differential effects on self-efficacy and achievement. Journal of Educational Psychology, 75, 848-856.
- Shaw, S. (1985). The disease concept of dependence. In N. Heather, I. Robertson, and P. Davies, (Eds.), The misuse of alcohol: Crucial issues in dependence treatment and prevention. New York: New York University Press.
- Shiffman, S. (1982). Relapse following smoking cessation: A situational analysis. Journal of Consulting and Clinical Psychology, 52, 261-267.
- Shiffman, S. (1984). Cognitive antecedents and sequelae of smoking relapse crises. Journal of Applied Social Psychology, 14(3), 296-309.

- Shiffman, S., Read, L., & Jarvik, M. E. (1985). Smoking relapse situations: A preliminary typology. International Journal of the Addictions, 20(2), 311-318.
- Shiffman, S., Read, L., Maltese, J., Rapkin, D., & Jarvik, M. E. (1985). Preventing relapse in ex-smokers: A self-management approach. In G. A. Marlatt and J. R. Gordon (Eds.), Relapse prevention: Maintenance strategies in the treatment of addictive behaviors. New York: Guilford Press.
- Shiffman, S., & Wills, T. A. (1985). (Eds.), Coping and substance abuse. San Diego, CA: Academic Press.
- Stewart, J., deWit, H., & Eikelboom, R. (1984). The role of unconditioned and conditioned drug effects in the self-administration of opiates and stimulants. Psychological Review, 91, 251-268.
- United States Public Health Service (1987). Smoking, tobacco, and health (DHHS Publication No. CDC 87-839). Rockville, MD: U. S. Department of Health and Human Services, Centers for Disease Control, Office on Smoking and Health.
- United States Public Health Service (1988). The health consequences of smoking-nicotine addiction: A report of the Surgeon General. Rockville, MD: U. S. Department of Health and Human Services, Office of the Assistant Secretary for Health, Office on Smoking and Health.
- Vuchinich, R. E., Tucker, J. A., Bordini, E., & Sullwold, A. F. (1981). Attributions of causality for drinking behavior made by alcoholics and by normal drinkers. Drug and Alcohol Dependency, 1981, 8, 201-206.
- Websters New Collegiate Dictionary. (1984). Springfield Mass.: G. & C. Merriam.
- Weiner, B. (1974). Achievement motivation and attribution theory. New Jersey: General Learning Press.
- Weiner, B. (1985). An attributional theory of achievement motivation and emotion, Psychological Review, 92(4), 548-573.
- Wikler, A. (1965). Conditioning factors in opiate addiction and relapse. In D. M. Wilner and G. G. Kassebaum (Eds.), Narcotics. New York: McGraw-Hill.

Wilcox, N., Prochaska, J., Velicer, W., & DiClemente, C. C. (1985). Subject characteristics as predictors of self-change in smoking. Addictive Behaviors, 10, 407-412.

Appendix A

Smoking Experiences Questionnaire

This survey is collecting information about cigarette smoking among University of Montana students. If you are a current or former smoker, or someone who has never smoked, we would appreciate your cooperation in filling out this questionnaire. It will require only a few minutes and your participation would be greatly appreciated. Do not sign your name on this questionnaire. Your responses are anonymous and will be treated confidentially.

PLEASE ANSWER ALL THE QUESTIONS WHICH APPLY TO YOUR INDIVIDUAL SMOKING EXPERIENCE. COMPLETE ONLY THE ITEMS THAT YOU ARE DIRECTED TO ANSWER.

PART 1

Age _____ Male _____ Female _____ Year in school _____

1. Are you now or have you ever been a cigarette smoker?
 YES. PLEASE ANSWER QUESTION # 2.
 NO. You do not need to continue. Thank you.

2. Have you quit smoking cigarettes for at least 24 hours during the past 3-4 months (0-120 days)?
 YES. PLEASE ANSWER QUESTION # 3.
 YES. But quit longer than 3-4 months ago. PLEASE ANSWER QUESTION # 3.
 NO. You do not need to continue. Thank you for your participation.

3. Please describe briefly the method(s) of quitting you used in your most recent quit attempt.

4. Do you now smoke:
 _____ not at all
 _____ on less than 2 occasions per week (an "occasion" can be 1 or more cigarettes)
 _____ on more than 2 occasions per week

5. If you smoke(d) on more than 2 occasions per week, approximately how many cigarettes do you think you smoke(d) per day? _____

6. If you smoke(d) on less than 2 occasions per week, approximately how many cigarettes do you think you smoke(d) per week? _____

7. How many years have you smoked cigarettes?
8. Approximately how many times have you tried to quit smoking?
9. How long ago was your most recent attempt to quit smoking? (i.e., went 24 hrs. without smoking) _____
10. Have you ever been in smoking cessation treatment to help you quit? Yes No
11. If you have not smoked at all since last quitting, try and clearly recall a specific situation since quitting in which you were highly tempted to smoke a cigarette but did not, then GO DIRECTLY TO PART 2 BELOW AND READ THE INSTRUCTIONS. If you have smoked on at least 1 occasion since your last quit attempt, DO NOT COMPLETE PART 2 BUT GO DIRECTLY TO PART 3 ON PAGE 4 AND READ THE INSTRUCTIONS.

PART 2 INSTRUCTIONS

The following questions are only to be answered if you have been strongly tempted to smoke but resisted a cigarette after quitting for at least 24 hours. If you have smoked on at least 1 occasion since your last quit attempt do not complete PART 2. Turn instead to PAGE 4 and read the instructions to PART 3. In attempting to answer these questions please try to recall as accurately as possible the thoughts and feelings that preceded, accompanied, and followed the situation in which you were most tempted to smoke.

1. What would you say was the one main cause or reason for your being tempted to smoke a cigarette? (Describe briefly)
2. Is this cause or reason of your being tempted to smoke due to something about you or something about other people or circumstances? Rate your answer on a scale from 1 to 7.

1	2	3	4	5	6	7
Totally due to other people and circumstances						Totally due to me
3. In the future if you are tempted to smoke again in a similar situation, will this cause or reason be present again? Rate your answer on a scale from 1 to 7.

1	2	3	4	5	6	7
Will never again be present						Will always be present

4. Is this cause or reason something that just influences smoking, or does it also influence other areas of your life? Rate your answer on a scale from 1 to 7.

1	2	3	4	5	6	7
Influences just this particular situation					Influences all situations in my life	

5. Is this cause or reason something that is controllable by you or uncontrollable by you? Rate your answer on a scale from 1 to 7.

1	2	3	4	5	6	7
Totally controllable by me					Totally uncontrollable by me	

6. Did you take any actions to try to resist smoking?

Yes _____ No _____

7. Just prior to being tempted to smoke a cigarette, how much were you feeling in control of yourself? Rate your answer on a scale from 1 to 7.

1	2	3	4	5	6	7
Very little in control						Very much in control

8. Just prior to being tempted to smoke, how confident were you in your ability to successfully cope with any future situation in which you might be tempted to smoke? Rate your answer on a scale from 1 to 7.

1	2	3	4	5	6	7
Not confident at all						Extremely confident

9. How guilty were you feeling about being tempted to smoke during and immediately following the experience? Rate your answer on a scale from 1 to 7.

1	2	3	4	5	6	7
Not at all guilty						Extremely guilty

10. After you resisted smoking a cigarette, how much were you feeling in control of yourself. Rate your answer on a scale from 1 to 7.

1	2	3	4	5	6	7
Very little in control						Very much in control

11. At this time, how confident are you in your ability to successfully cope with any future situation in which you might be tempted to smoke? Rate your answer on a scale from 1 to 7.

1	2	3	4	5	6	7
Not confident at all						Extremely confident

Do not continue, this is the end of the questionnaire. Thank you for your participation. If you have any questions about this survey please contact Andrew Forsyth, Dept. of Psychology, University of Montana, 243-4523.

PART 3 INSTRUCTIONS

In attempting to answer the following questions please try to recall as accurately as possible the thoughts and feelings that preceded, accompanied, and followed your initial return to smoking experience.

1. What would you say was the main cause or reason for your smoking that first cigarette? (Describe briefly)

2. Is this cause or reason of your smoking due to something about you or something about other people or circumstances? Rate your answer on a scale from 1 to 7.

1	2	3	4	5	6	7
Totally due to other people and circumstances						Totally due to me

3. In the future if you smoke again in a similar situation, will this cause or reason be present again? Rate your answer on a scale from 1 to 7.

1	2	3	4	5	6	7
Will never again be present						Will always be present

4. Is this cause or reason something that just influences smoking, or does it also influence other areas of your life? Rate your answer on a scale from 1 to 7.

1	2	3	4	5	6	7
Influences just this particular situation						Influences all situations in my life

5. Is this cause or reason something that is controllable by you or uncontrollable by you? Rate your answer on a scale from 1 to 7.

1	2	3	4	5	6	7	
Totally controllable by me						Totally uncontrollable by me	

6. Did you take any actions to try to resist smoking?
Yes _____ No _____

7. Just prior to smoking that first cigarette, how much were you feeling in control of yourself? Rate your answer on a scale from 1 to 7.

1	2	3	4	5	6	7	
Very little in control						Very much in control	

8. Just prior to smoking that first cigarette, how confident were you in your ability to successfully cope with any future situation in which you might be tempted to smoke? Rate your answer on a scale from 1 to 7.

1	2	3	4	5	6	7	
Not confident at all						Extremely confident	

9. How guilty were you feeling about smoking during and immediately following the experience? Rate your answer on a scale from 1 to 7.

1	2	3	4	5	6	7	
Not at all guilty						Extremely guilty	

10. After you smoked that first cigarette, how much were you feeling in control of yourself. Rate your answer on a scale from 1 to 7.

1	2	3	4	5	6	7	
Very little in control						Very much in control	

11. At this time, how confident are you in your ability to successfully cope with any future situation in which you might be tempted to smoke? Rate your answer on a scale from 1 to 7.

1	2	3	4	5	6	7	
Not confident at all						Extremely confident	

This is the end of the questionnaire. Thank you for your participation. If you have any questions about this survey please contact Andrew Forsyth, Dept. of Psychology, University of Montana, 243-4523.

Appendix B

Table 1

Subject Characteristics by Level of Smoking Status

	<u>Abstainer</u>	<u>Slip-abstainer</u>	<u>Relapser</u>	<u>F-ratio</u>
Age				
Mean	23.2(a)	22.10(a)	26.77(a,b)	7.41*
SD	5.54	4.37	8.21	
Mode	19	19	21	
Current year in college				
Mean	1.98	2.02	1.90	
Mode	1.00	1.00	1.00	
Number of cigarettes smoked per day prior to last quitting				
Mean	11.42	9.55(a)	17.25(a,b)	4.46*
SD	10.36	16.05	13.19	
Mode	2.00	2.00	20.00	
Number of cigarettes presently smoking per day				
Mean	.200	.733	11.84	
SD	1.07	1.28	7.90	
Mode	.000	.000	20.00	
Number of years smoked prior to last quitting				
Mean	8.07	5.00	9.69	2.84
SD	14.74	4.17	6.95	
Number of prior attempts to quit smoking				
Mean	8.26	6.43	6.14	.251
SD	20.16	16.05	6.43	
Time since last quit attempt				
Mode	+1 mo.-3 mos.	+1 mo.-3 mos.	+1 wk.-1 mo.	
Median	+1 mo.-3 mos.	+1 mo.-3 mos.	+1 wk.-1 mo.	
Tried to cope with temptation to smoke				<u>Chi-squared</u>
Yes	40 (80%)	22 (49%)	29 (56%)	11.00**
No	10 (20%)	23 (51%)	23 (44%)	

Sex

Male	20 (39%)	16 (36%)	22 (42%)	1.603
Fem.	31 (61%)	29 (64%)	30 (58%)	

Received prior smoking treatment

Yes	3 (6%)	1 (2%)	2 (3%)	.9800
No	44 (93%)	43 (98%)	50 (96%)	

Note: Means with the same subscript are not significantly different by Scheffe's test at $p < .05$. Univariate critical values are Bonferroni adjusted ($p < .05$). Chi-squared Degrees of Freedom = 2

** $p < .01$

* $p < .05$

Appendix C

Table 2

AVE, Attribution, and Guilt Group
Means by Level of Smoking Status

	<u>Abstainer</u>	<u>Slip-abstainer</u>	<u>Relapser</u>	<u>F Ratio</u>
AVE				
Mean	3.55(a)	3.65(a)	4.29(a,b)	6.41*
SD	1.05	1.18	1.19	
Locus of causality				
Mean	3.59(a)	3.62(a)	4.69(a,b)	5.70*
SD	1.97	1.89	1.76	
Stability				
Mean	2.92(a)	3.53(a)	4.25(a,b)	5.88*
SD	1.85	2.03	2.02	
Globality				
Mean	4.65	4.35	4.92	1.03
SD	1.72	2.19	1.92	
Controllability				
Mean	3.04	3.07	3.31	.271
SD	2.00	2.20	1.88	
Postlapse guilt				
Mean	3.55	3.36	3.36	.148
SD	1.96	2.00	2.01	

Note: Means with the same subscript are not significantly different at $p < .05$.

* $p < .01$