DISSERTATION

MOTIVATIONAL GOAL ORIENTATIONS AND THE SMOKING CESSATION PROCESS

Submitted by

Nicholas E. Perrine

Department of Psychology

In partial fulfillment of the requirements

For the Degree of Doctor of Philosophy

Fort Collins, Colorado

Summer 2005

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

UMI Number: 3185532

INFORMATION TO USERS

The quality of this reproduction is dependent upon the quality of the copy submitted. Broken or indistinct print, colored or poor quality illustrations and photographs, print bleed-through, substandard margins, and improper alignment can adversely affect reproduction.

In the unlikely event that the author did not send a complete manuscript and there are missing pages, these will be noted. Also, if unauthorized copyright material had to be removed, a note will indicate the deletion.

UMI®

UMI Microform 3185532

Copyright 2005 by ProQuest Information and Learning Company. All rights reserved. This microform edition is protected against unauthorized copying under Title 17, United States Code.

ProQuest Information and Learning Company
300 North Zeeb Road
P.O. Box 1346
Ann Arbor, MI 48106-1346

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

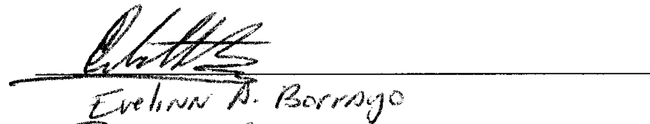
COLORADO STATE UNIVERSITY

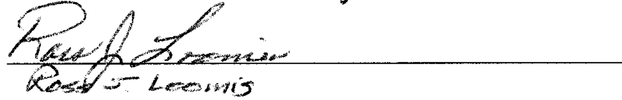
March 25, 2005

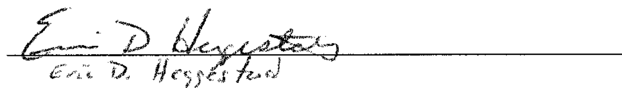
WE HEREBY RECOMMEND THAT THE DISSERTATION PREPARED UNDER OUR SUPERVISION BY NICHOLAS E. PERRINE ENTITLED MOTIVATIONAL GOAL ORIENTATIONS AND THE SMOKING CESSATION PROCESS BE ACCEPTED AS FULFILLING IN PART REQUIREMENTS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY

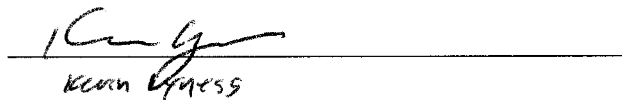
Committee on Graduate Work

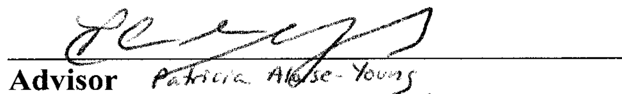
(Please print name under signature)



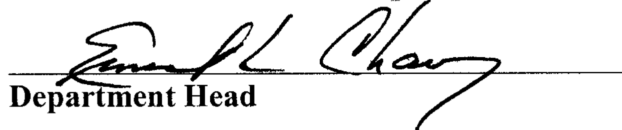








Advisor



Department Head

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

ABSTRACT OF DISSERTATION

MOTIVATIONAL GOAL ORIENTATIONS AND THE SMOKING CESSATION PROCESS

Researchers have suggested for years that a "one size fits all" approach to smoking cessation programs may limit their effectiveness. It has further been suggested that the ability to effectively match smokers to treatment programs would represent a major advancement to the field (Shiffman, 1993; Smith & Fiore, 1999). In the present study, individual differences in motivational goal orientations were hypothesized to influence smoking cessation rates due to differences in responses to negative feedback (i.e., inability to quit and relapses) as well as interactions with reward structures of the environment. Participants were 114 adults enrolled in smoking cessation programs. Results suggested that a stronger performance goal orientation was associated with significantly lower quit rates at the 6-month follow-up among research participants who were unable to quit at the 1-month follow-up. Moreover, self-efficacy mediated the relationship between performance goal orientation and quitting. While a significant change in extrinsic rewards was observed, the interaction between motivational goal orientations and intrinsic or extrinsic rewards was not observed to affect smoking cessation rates. Implications for goal orientation theory as well as implications for the design of smoking cessation programs are discussed.

Nicholas E. Perrine
Psychology Department
Colorado State University
Fort Collins, CO 80523
Summer 2005

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Acknowledgements

Dedicated in memory to Susan L. Perrine for her love, support, and encouragement throughout my life. I would like to thank my wife Melissa C. Perrine for her sacrifices and support through this long journey. Without her support this project would never have been completed.

I would also like to thank the Colorado Tobacco Research Program for funding my dissertation (Grant Number: 2D-007).

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Table of Contents

Chapter 1	
1.1 HEALTH CONSEQUENCES AND PREVALENCE OF CIGARETTE SMOKING	1
1.2 PREDICTORS OF CESSATION	2
1.3 STATE OF THE SCIENCE REGARDING FORMAL CESSATION PROGRAMS	4
1.4 APPLICATIONS FROM MOTIVATION LITERATURE TO SMOKING CESSATION	8
1.5 INTERACTIONS BETWEEN PERSONALITY AND THE SITUATION	17
1.6 SITUATIONAL INFLUENCES ON SMOKING CESSATION	17
1.7 INDIVIDUAL DIFFERENCES IN REACTIONS TO RELAPSE	19
1.8 HYPOTHESES	22
CHAPTER 2: METHODS	
2.1.1 PARTICIPANTS	25
2.1.2 HEALTH CENTER/ COLLEGE SAMPLE	25
2.1.3 PUBLIC HEALTH AGENCY/ GENERAL ADULT POPULATION	25
2.1.4 SIGNIFICANT DIFFERENCES BETWEEN RECRUITMENT SITES	26
2.1.5 TOTAL SAMPLE	26
2.2 MEASURES	28
2.3 PROCEDURES	31
CHAPTER 3: RESULTS	
3.1 DROPOUT AND MISSING DATA	32
3.2 DESCRIPTIVE STATISTICS	32
3.3 CHANGE IN SMOKING RATE AND QUIT RATES	33
3.4 CROSS-SECTIONAL ANALYSIS AT ENROLLMENT	36
3.5 INFERENTIAL STATISTICS	36
3.5.1 MOTIVATIONAL GOAL ORIENTATIONS AND SMOKING BEHAVIOR	36
3.5.2 MOTIVATIONAL GOAL ORIENTATIONS AND ATTRIBUTIONS	40
3.5.3 MOTIVATIONAL GOAL ORIENTATIONS FOLLOWING FAILURE FEEDBACK	41
3.5.4 MEDIATED MODEL: Goal Orientations, self-regulation, and smoking cessation	43
3.6 CHANGE IN RFQ	45
3.7 MOTIVATIONAL GOAL ORIENTATIONS AND RFQ CHANGE INTERACTIONS	46
CHAPTER 4: DISCUSSION	
4.1 SUMMARY	48
4.2 THEORETICAL IMPLICATIONS	48
4.3 APPLIED IMPLICATIONS (DESIGN OF SMOKING CESSATION PROGRAMS)	55
4.4 STRENGTHS AND LIMITATIONS	59
REFERENCES	62
TABLES AND FIGURES	68
APPENDIX: STUDY SURVEYS	89

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Motivational Goal Orientations and the Smoking Cessation Process

1.1 HEALTH CONSEQUENCES AND PREVALENCE OF CIGARETTE SMOKING

The majority of health professionals and the general public have been aware of the detrimental health consequences of smoking for several decades (U.S. Department of Health and Human Services, 1964). Cigarette smoking is the single most preventable cause of premature death in the United States. Each year, more than 400,000 Americans die from cigarette smoking (CDC, 1993a). Secondhand smoke (or environmental tobacco smoke) is estimated to cause nearly 3,000 additional deaths every year (CDC,1993b). In fact, one in every five deaths in the United States is smoking related. Smoking is related to an increased risk of lung cancer, bronchitis, heart disease and emphysema (U.S. Department of Health and Human Services, 1988). In 2003, 22% of adults in the U.S. were current smokers (CDC Behavioral Risk Factor Surveillance System, http://apps.nccd.cdc.gov/brfss/). However, smoking rates are much higher within different segments of the U.S. population. Targeted treatment efforts are needed to address disparities in smoking rates as well as subsequent health risks associated with smoking based upon age, socio-economic background, and level of education. For example, adults without a high school diploma are nearly three times more likely to be a current smoker compared to adults with a college degree. In 2003, 33.6% of adults without a high school diploma were current smokers, compared to just 11.9% of adults with a college degree. In addition, 30% of adults earning less then $25,000 annually

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

were current smokers, compared to just 17% of adults, in the highest economic bracket, earning more than $50,000 annually. Thirty percent of adults between the ages of 18 and 24 were current smokers. Therefore, a tremendous need exists within the U.S. for smoking cessation services.

1.2 Predictors of Cessation

Since the dangers of smoking were recognized, psychologists have put their skills to use in developing empirically supported cognitive and behavioral techniques that could be used by individuals interested in quitting smoking (Cinciripini, Cinciripini, Wallfisch, Hague, & Vunakis, 1996; Hatsukami & Lando, 1999; Lando, 1989, 1993). Considerable research has been dedicated to understanding the smoking cessation process as well as improving success rates at quitting (Lichtenstein & Glosgow, 1992; Glasgow & Lichtenstein, 1987). However, more research is necessary because to date only a handful of factors have been found to be consistently related to quitting.

Gender, socio-economic status, marital status, number of previous quit attempts, and number of cigarettes per day have all been related to quitting success (U.S. Department of Health and Human Services, 1988; Matheny & Weatherman, 1998; Perchacek & Dandher, 1979). Specifically, women, individuals from lower socio-economic backgrounds, and separated, divorced, or widowed smokers are less likely to be able to successfully quit. Moreover, number of previous quit attempts and daily smoking rate are both inversely related to successfully quitting. These factors, which are related to quitting, help to identify populations that are at greatest need for services due to a high risk of failed long-term abstinence. However, these factors do not directly inform the content or substance of interventions that should be delivered. Psychosocial variables

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

that are grounded in theory not only identify individuals who require additional intervention services but also inform the content of intervention services. Again, few psychological variables appear to be predictive of either short- or long-term abstinence.

Negative affectivity/depression, self-efficacy, perceived coping resources, problem solving (skills training), social support, and nicotine dependence are related to quitting success (Baer, Kamarck, Lichtenstein, & Ransom, 1989; Carton, Jouvent, & Widlocher, 1994; Glassman et al., 1993; Gulliver, Hughes, Soloman, & Dey, 1995; Lawrence & Rubinson, 1986; Lichtenstein & Glasgow, 1992; Niaura & Abrams, 2002). Nicotine dependence is a reliable predictor of smoking cessation rates (Lichtenstein & Glasgow, 1991). Typically, number of cigarettes consumed per day is used to assess nicotine dependence. Someone who smokes around a pack of cigarettes per day is considered to be a heavy smoker or nicotine dependent (Lichtenstein & Glasgow, 1991). Smokers with depression typically smoke more cigarettes than smokers who do not suffer from depression/negative affectivity, which may partially explain the relationship between depression/negative affectivity and smoking cessation rates (Carton et al., 1994; Glassman et al., 1993; Niaura & Abrams, 2002).

Coping resources, social support, and problem solving skills are also factors that improve smoking cessation rates. Coping resources and social support concern the amount of resources available to a person attempting to quit. Problem solving skills represent the ability of individuals to identify and appropriately handle situations that may lead to relapses (Niaura & Abrams, 2002; Ockene et al., 2000). Smoking cessation interventions attempt to enhance the coping resources, social support, and problem solving skills of individuals attempting to quit so as to reduce probabilities of relapse as

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

well as to decrease time to renewed quit following relapse. Further, social learning theory suggests that skills training should improve self-efficacy or confidence in the ability to quit (Bandura, 1986; 1991). Clinical interventions typically intervene with multiple treatment components that address several suspected mechanisms to cessation (Lichtenstein & Glasgow, 1992). Unfortunately, even the most successful cessation programs report abstinence rates that do not exceed 30% (Lando, 1989; The Tobacco Use and Dependence Clinical Practice Guideline Panel, 2000).

1.3 State of the Science Regarding Formal Cessation Programs

Advancement in behavioral treatments for tobacco use have been slow in development over the past three decades (Niaura & Abrams, 2002; Shiffman, 1993). In fact, much of the published research has been limited to studies investigating the effectiveness of adapting existing behavioral treatments into public health programs. A result of the dearth in basic research investigating smoking cessation has been limited improvement in success rates for both clinical and public health programs (Niaura & Abrams, 2002; Shiffman, 1993). Moreover, much of the improvement in clinical and public health programs designed to treat tobacco use has come from the development of pharmacotherapy and nicotine replacement therapies (Lichtenstein & Glasgow, 1992; Niaura & Abrams, 2002; Shiffman, 1993).

There are several different ways to evaluate smoking cessation programs. Using different outcome measures is critical, particularly when assessing relapse and abstinence following relapse. Continuous abstinence is defined as no smoking relapse since the initial quit attempt (quitting is defined as a 24-hour period without smoking). Continuous abstinence is considered to be a more rigorous measure of quitting success than is point-

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

prevalence. Point-prevalence is defined as at least 7 days of smoking abstinence at the time of measurement (e.g., does not include smoking 10 days prior to assessment; Shipley, Rosen, & Williams, 1982; Task Force 1, 1986). It is advantageous to report both continuous and point-prevalence abstinence rates when investigating motivation and smoking cessation success. Each dependent measure provides different information concerning the ability of smokers to quit. Continuous abstinence is a measure of one's ability to avoid relapse, while point-prevalence abstinence is a measure of one's ability to quit again after relapse has occurred. Data resulting from continuous abstinence assessments provides insight into the few individuals who are able to quit smoking and avoid lapses and relapses. Point-prevalence assessments, when used in conjunction with assessments of relapse, may prove to be more useful in understanding how personality and subsequent attributions for lapses influence whether a person proceeds to another quit attempt or full-blown relapse. Thus, researchers in the field of smoking cessation should assess both continuous as well as point-prevalence abstinence rates because each measure provides different data (Shipley et al., 1982; Task Force 1, 1986).

Several researchers have suggested a need to renew efforts in basic research with the goal of explicating the smoking cessation process and developing new treatment modalities. Moreover, the "holy grail" of smoking cessation programs, namely the idea of patient-treatment matching remains unrealized (Niaura & Abrams, 2002; Shiffman, 1993). The idea of tailoring treatment protocols to individuals is an important goal of tobacco researchers (Niaura & Abrams, 2002; Shiffman, 1993; Smith & Fiore, 1999). In order to successfully match a smoker to a treatment program there must exist an understanding of the individual difference variables which distinguish smokers who are

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

most likely to be successful in a specific type of treatment program from those who would be less successful. Shiffman (1993) delineated the requirements that must be met in order to achieve patient-treatment matching. First, valid measurement, which can reliably distinguish patients along a dimension, is required. Second, development of appropriate treatment programs, which systematically interact with patient characteristics to yield improved abstinence rates, is required. Finally, Shiffman notes that the first two points can only be achieved through the development of theory. Advantages of matching patients to treatment programs include increasing the cost-effectiveness of treatment and avoiding overly burdening patients with program protocols/components that are not effective, thereby avoiding trial and failure.

Matching smokers to a treatment program that is tailored to the smoker's needs is envisioned to be similar to the aptitude-treatment interaction (ATI) research conducted by educational psychologists. Educational psychologists have established that the academic performance of students with different aptitudes (i.e., cognitive abilities) is differentially influenced by the amount of structure provided by teachers (Snow, 1989). Students with lower cognitive abilities appear to benefit from, as assessed by test performance, a high level of structure and organization, while no such benefit was observed among students with higher levels of cognitive ability. The present study builds upon the ATI perspective by investigating potential individual difference factors that may serve as a taxonomy for tailoring treatment programs based upon a smoker's personality. Tailoring tobacco treatment could increase abstinence rates by addressing the smoker's strengths and weaknesses. Research within the field of motivation was searched with the goal of

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

identifying relevant individual difference variables that would be useful in further understanding the smoking cessation process.

Smoking cessation is best described as a process rather than an event. Behavior change involving addictive behaviors has been described as a "dynamic and cyclical process that occurs over time" (Spanier, Shiffman, Maurer, Reynolds, & Quick, 1996, p. 191). For example, even after quitting, a former smoker must continue to resist and cope with situations which in the past were associated with smoking behavior. It has been observed that performance on long-term tasks is less dependent upon one's ability and more dependent upon one's motivation (Helmreich, Sawin, & Carsrud, 1986; Kanfer & Ackerman, 1989). Smoking cessation is an example of a long-term task that includes potential failures and requires consistent midcourse adjustments (e.g., why did I relapse this time and what can I learn from this relapse?). Research in the field of motivation has suggested that reaction to failure feedback is influenced by one's personality or motivation orientation (Diener & Dweck, 1978, 1980; Dweck & Leggett, 1988). That is, differences in motivation may influence how people interpret relapses and their ability/desire to engage in a renewed quit attempt. Consequently, individual differences in motivational orientations may provide researchers and practitioners with a useful taxonomy to identify individuals who may be at an increased risk for deleterious outcomes following failed quit attempts. Creation of a framework that would enable researchers and practitioners to effectively match smokers to treatment programs, resulting in better long-term success rates, would represent a major advancement for the field. The present project suggests that a motivational framework may provide some insight into the process of smoking cessation.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

The following section explores the potential of adopting theory from the motivation literature and applying it to the smoking cessation process. The following review identifies factors related to abstinence as well as the self-regulatory mechanisms associated with abstinence. In addition, it is believed that reviewing the motivational literature for factors with application to tobacco treatment may be useful in identifying constructs that can be used as a foundation for eventual treatment-matching programs (Niaura & Abrams, 2002; Shiffman, 1993).

1.4 Applications from Motivation Literature to Smoking Cessation

Motivation has been defined as that which affects the direction, intensity, and persistence of a person's behavior (Kanfer, 1995). Given that smoking cessation is a long-term task, persistence of behavior related to smoking cessation should be critical in determining success. Thus, examining current smokers' motivation for quitting may advance the understanding of why most smokers have such a difficult time quitting and how interventions can more effectively aid smokers in quitting. Cognitive Evaluation Theory (CET) and goal orientation theory both identify factors that have been demonstrated to be associated with intrinsic motivation and performance. While CET attempts to identify the social and environmental factors that facilitate rather than undermine intrinsic motivation, goal orientation theory identifies personality traits influential to motivation. Integration of the two theories may be a starting point for further research into patient-treatment matching cessation programs. Past research on smoking cessation has successfully related constructs from CET to quitting (Curry, McBride, Grothaus, Lando, & Pirie, 2001; Curry, Grothaus, & McBride, 1997; Curry, Wagner, & Grothaus, 1990, 1991).

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Cognitive Evaluation Theory suggests that three environmental factors affect the extent to which one is intrinsically motivated. Autonomy, competence, and relatedness are posited to influence intrinsic motivation (Ryan & Deci, 2000). Deci (1972, 1975) observed that experimental conditions receiving extrinsic rewards to complete laboratory tasks self-reported significantly less intrinsic motivation and were observed to spend significantly less time on the task during the experiment compared to controls. Deci suggested that degree of task autonomy, or the extent to which the task was imposed upon individuals, was responsible for differences between the conditions. CET further hypothesizes that individuals who perceive task or environmental autonomy likely adopt an internal locus of causality, while individuals who experience a lack of autonomy likely adopt an external locus of causality (Ryan and Deci, 2000). Moreover, internal rather than external locus of causality is purported to facilitate intrinsic motivation.

According to CET, constructive feedback that serves to increase competence enhances intrinsic motivation, while negative performance feedback reduces intrinsic motivation (Vallerand and Reid, 1984). Finally, relatedness is hypothesized to influence intrinsic motivation. Less research has investigated the link between the relatedness construct and intrinsic motivation. However, the extent to which a task is internalized, which depends upon relatedness to the individual, is purported to influence intrinsic motivation (Ryan & Deci, 2000). While empirical studies used to support CET have been interpreted differently by other researchers (i.e., overjustification effect interpretation; see Cameron & Pierce, 1994; Eisenberger and Cameron, 1996), constructs from CET have been applied by health researchers to influence smoking abstinence (Curry et al., 1991).

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

In a series of studies, Curry and her colleagues developed the Reasons for Quitting scale (RFQ) and established relationships between the RFQ scale and long-term smoking abstinence (Curry et al., 1990, 1991, 1997, 2001). Development of the scale was theoretically based upon Ryan and Deci's (2000) CET and conceptualizations of intrinsic and extrinsic motivation. Health concerns (e.g., noticed harmful physical symptoms) and Self-control (e.g., to be in control of my life) represent the two intrinsic dimensions of the RFQ scale. Immediate reinforcement (e.g., save money on cigarettes) and Social influence (e.g., want people to stop nagging) represent the two extrinsic dimensions of the RFQ scale. Items from the Intrinsic and Extrinsic RFQ scales were designed to assess differences in the extent to which reasons for quitting were internalized (derived from the relatedness construct) and resulted in an internal versus external locus of causality (autonomy construct). In general, extrinsic reasons for quitting (immediate reinforcement and social influence) were related to lower long-term abstinence rates compared to intrinsic reasons for quitting (health concerns and self-control; Curry et al., 1990, 1991, 1997).

Similarly, results from a study that employed a population-based sample suggested that participants classified as having primarily intrinsic reasons (e.g., present health, future health, and setting an example for children) were more likely to successfully quit compared to participants classified as having primarily extrinsic reasons (e.g., cost, effect on others, and pressure to quit from others) for quitting (Halpern & Warner, 1993). Based upon results suggesting that intrinsic reasons were associated with better outcomes, Curry and colleagues (1991) developed a self-help smoking cessation intervention that was hypothesized to elicit intrinsic and extrinsic motivation.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Curry and colleagues (1991) developed intrinsic and extrinsic motivational interventions based upon CET. According to CET, intrinsic and extrinsic rewards influence interpretations of autonomy and competence. Extrinsic rewards are perceived by individuals as controlling (i.e., resulting in an attribution of external locus of causality) and providing little in the way of informational feedback. The result of receiving extrinsic rewards is a decrease in self-efficacy. Intrinsic rewards, however, are perceived as less controlling (i.e., resulting in an attribution of internal locus of causality) and more informational in nature. The result of receiving intrinsic rewards is an increase in perceived autonomy and self-efficacy (Ryan & Deci, 2000). Thus, CET suggests that intrinsic rewards (e.g., informational feedback) should facilitate intrinsic motivation, while extrinsic rewards should undermine intrinsic motivation (Ryan & Deci, 2000). Curry and her colleagues (1991) were able to demonstrate that intrinsic rewards resulted in increased performance among smokers in a self-help cessation program.

In Curry's study (1991), research participants who were assigned to the extrinsic motivation intervention received self-help material through the mail and were informed that they could send in completed intervention materials which would automatically enroll them into a prize-drawing. Research participants would only be enrolled in the drawing if they sent in completed program material. Participants who were assigned to the intrinsic motivation intervention received self-help material through the mail and were informed that they would receive written personalized feedback, designed to bolster confidence in their ability to quit, if they mailed in completed program materials. Research participants who were assigned to the extrinsic motivational intervention were twice as likely to use intervention materials compared to control participants. However,

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

research participants receiving the intrinsic intervention were twice as likely to report being continuously abstinent at the 12-month follow-up compared to those in the control group and three times as likely to be continuously abstinent compared to those in the extrinsic intervention group. Interestingly, differences in abstinence rates between individuals in the intrinsic and extrinsic interventions developed and grew over time. Moreover, the extrinsic intervention was associated with higher relapse rates among those who did quit. This result is consistent with other research demonstrating that the impact of motivational factors upon performance typically emerges over time after individuals receive feedback concerning their current level of performance (Curry et al., 1991; Kanfer & Ackerman, 1989). Results suggest that the relationship between reasons for quitting (intrinsic versus extrinsic) and reactions to setbacks or failures (i.e., feedback) may be the driving force of differential long-term success rates between intrinsic and extrinsic reasons for quitting.

Cognitive evaluation theory has historically focused on how situational constraints (i.e., amount of autonomy versus control) influence motivation. Individual differences, and the effect they have on motivation, have largely been neglected by CET (Ryan and Deci, 2000). Another theory from the motivation literature, goal orientation theory, focuses upon the personality traits that are differentially related to task performance and more specifically to the self-regulatory processes associated with task performance (Button, Mathieu, & Zajac, 1996; Dweck, Chiu, & Hong, 1995). Within goal orientation theory, differential relationships with task performance result from trait-based differences in the interpretation of feedback. Valid tools now exist which allow scientists to reliably assess personality traits that have been theoretically and empirically

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

related to task performance. Moreover, recent strides in the field of motivation have established that both personality and situational constraints influence motivation and subsequent performance (Kanfer, 1995; Weiner, 1990).

Historically, research in motivation has captured the interest of psychologists in the educational and industrial fields of psychology (Weiner, 1990). Psychologists in these two fields have focused research attention on developing an understanding of how motivation influences performance (i.e., the process). Motivational theories suggest that discrepancies between goals and performance generate motivation to reduce goal-performance discrepancy. Goal-performance discrepancies motivate individuals to increase effort, downwardly adjust goals, or withdraw from tasks (Austin & Vancouver, 1996; Bandura, 1986; Carver & Scheier, 1981). Past research has identified certain dispositions that influence how different people respond to goal-performance discrepancies (Button et al., 1996; Dweck et al., 1995; Dweck & Leggett, 1988).

While educational and industrial psychologists have explored relations between motivation and performance, personality psychologists have examined the link between personality traits and performance. This second line of research has also begun to converge on the idea that self-regulatory processes (e.g., self-efficacy and goal setting) mediate the relationship between certain personality traits and performance (Barrick, Mount, & Strauss, 1993; Chen, Gully, Whiteman, & Kilcullen, 2000; Dweck & Leggett, 1988; Elliot & Sheldon, 1997; Kozlowski et al., 2001; Radosevich, Vaidyanathan, Yeo, & Radosevich, 2004; VandeWalle, Brown, Cron, & Slocum, 2001). Over the years, psychologists have begun to identify the self-regulatory processes that are associated with high levels of classroom and workplace performance (Ackerman & Heggestad, 1997;

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Kozlowski et al., 2001; VandWalle et al., 2001). Three processes that are consistently related to performance are autonomous goal setting, goal striving (Barrick et al., 1993; Locke, Shaw, Saar, & Latham, 1981; VandeWalle et al., 2001) and self-efficacy (Bandura, 1991; Chen et al, 2000). For example, performance feedback may influence self-efficacy which, in turn, may influence subsequent task performance (Kozlowski et al., 2001; VandeWalle et al., 2001). In addition, certain individuals may seek out more feedback on task performance and/or spontaneously set specific and difficult goals. Psychologists also have been able to uncover the motivational personality traits that are related to these specific self-regulatory processes (e.g., mastery orientation; Button et al., 1996; Dweck & Leggett, 1988). Both theory and empirical evidence suggest that motivational goal orientations affect the interpretation of feedback and are subsequently related to performance (Button et al., 1996; Dweck et al., 1995; Dweck & Leggett, 1988).

Development of measures designed to assess motivational goal orientations are based upon implicit theories of personal attributes (Dweck & Leggett, 1988). Namely, research suggests that people tend to believe that personal attributes, including but not limited to ability/intelligence and morality, are either fixed or malleable. Those who implicitly believe that personal attributes are fixed and unchanging are said to hold an entity theory of personal attributes. Those who implicitly believe personal attributes are dynamic and malleable are said to hold an incremental theory of personal attributes (Diener & Dweck, 1978; 1980; Dweck et al, 1995; Dweck & Leggett, 1988). Incremental and entity theories of personal attributes have been reconceptualized as learning/mastery and performance goal orientations, respectively (Butten et al., 1996). Learning/mastery and performance goal orientations are orthogonal constructs which

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

suggests that people may be high or low on either trait. Research suggests that implicit theories of personal attributes influence the types of goals people set as well as how people interpret and respond to feedback.

Individuals with a learning or mastery goal orientation tend to approach tasks with an objective of increasing their competence or mastery of the subject area (Dweck & Leggett, 1988). Not surprisingly, such individuals with a learning or mastery orientation not only report more intrinsic motivation for the task but also have more complex schemas of the subject area as demonstrated by knowledge structure assessments (Kozlowski et al., 2001). Learning goal orientation is positively related to the use of goal setting, higher levels of self-efficacy, and intrinsic motivation. Goal setting and higher levels of self-efficacy are subsequently related to better performance outcomes (Locke et al., 1981). In contrast, individuals with a performance orientation tend to approach tasks with an interest in gaining favorable judgments of their competence (Dweck & Leggett, 1988). Moreover, individuals with a high performance orientation are motivated to illustrate their ability to others by achieving high performance with little effort. Performance orientations are *not* related to the use of self-regulatory processes (Chen et al., 2000). Performance orientation is related to avoidance of tasks or situations that may result in failure or which force one to expend a large amount of effort in order to achieve a high level of performance (Dweck & Leggett, 1988). Performance-oriented individuals are more vulnerable to a helpless response pattern after experiencing failure (Diener & Dweck, 1978, 1980). In contrast, a learning orientation is related to increased expenditure of effort following negative feedback. Increased effort following negative

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

feedback is related to a learning orientation because feedback is interpreted in a non-threatening manner. Hence, a learning orientation is related to a desire to increase competence.

While learning and mastery orientations are related to better long-term outcomes, performance orientations may relate to better short-term performance outcomes (Elliot & Church, 1997; Kozlowski et al., 2001). However, differences in performance between persons with different motivational orientations are only likely to emerge after an individual experiences negative feedback concerning performance. Although these personality characteristics have not been studied in the field of smoking cessation it seems likely that these differences in short- and long-term outcomes may generalize to smoking cessation programs in the form of better short-term outcomes among performance oriented smokers and better long-term outcomes among learning oriented smokers. It is noteworthy that this parallels the pattern that has been observed in the smoking cessation literature for intrinsically and extrinsically motivated smokers.

In summary, Cognitive Evaluation Theory and goal orientation theory have complementary application to the field of smoking cessation. Cognitive Evaluation Theory identifies the environmental factors responsible for motivation and performance. In fact, constructs from CET have been observed to be related to smoking abstinence. Goal orientation theory identifies personality traits associated with motivation and performance (Dweck & Leggett, 1988). Moreover, goal orientation theory suggests several self-regulatory variables that mediate the relationship between personality traits and performance (Barrick et al., 1993; Chen et al., 2000; Elliot & Sheldon, 1997; Kozlowski et al., 2001; VandeWalle et al., 2001). Employing the strengths of CET and

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

goal orientation theory may further understanding of the smoking cessation process and may lead to realizing patient-treatment matching for tobacco treatment.

1.5 Interactions between Personality and the Situation

Research has *not* suggested that one goal orientation results in more motivation than the other, but rather that there exist fundamental differences between the goal orientations. For example, it has been suggested that the fundamental difference between orientations lies within the types of stimuli that serve as rewards (Rummel & Feinberg, 1990). It appears that consistency between a person's personality orientation (either extrinsic or intrinsic) and the type of reward received (either extrinsic or intrinsic) is most important for increasing one's motivation. In other words, motivation is highest when a person receives a reward that is consistent with his/her motivational orientation. The interaction between personality and the situation appears to do a better job of explaining behavior compared to examining personality or the situation alone (Rummel & Feinberg, 1990). Therefore, individual differences may exist between smokers in terms of the types of rewards that result in increased motivation. For example, consistency between one's motivational orientation (i.e., performance and learning) and the environment may have profound effects on the motivation of a person to quit smoking. As a result, it is critical to examine the types of rewards that dominate the situation/environment created by formal smoking cessation programs.

1.6 Situational Influences on Smoking Cessation

Formal smoking cessation programs are supportive groups designed to teach smokers techniques that aid quitting and prevent relapses. Formal programs also provide smokers with constant support and social rewards for quitting. Typically, formal

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

programs meet once or twice per week for a relatively brief period of time (i.e., eight weeks). A formal program that ritually meets for six to eight weeks is illustrative of a situation that is extrinsically rewarding. In addition to the support received from the group, family members and friends of a smoker who is enrolled in a formal smoking cessation program are likely to constantly reward a smoker for attempting to quit. These constant rewards are likely to include both verbal (e.g., praise and expressions of being impressed at the smoker's ability) and tangible rewards (e.g., favorite meals and money). However, smokers who employ the use of formal treatment programs to facilitate quitting may experience a change and transition of reward types after completing the program. Initially support from the counselor or cessation group is lost. Moreover, smokers who have successfully quit (now former smokers) likely receive less verbal and tangible rewards from family and friends because their quitting is less salient to others when the quitting is no longer new and visible (e.g., family and friends see them go to treatment). With this decrease in extrinsic rewards for quitting, smokers must develop self-rewarding mechanisms after the treatment program has terminated. Essentially, smokers must perceive some intrinsic reward for their ability to abstain from smoking months after a formal treatment program has terminated. In other words, *the environment has changed from an extrinsically rewarding situation to an intrinsically rewarding situation.* This is the first known study to suggest and assess the potential changing reward structure of a quitting smoker's environment.

This transition of the situation from an extrinsically to an intrinsically rewarding situation is similar to the transition experienced in the workplace by new employees. The motivation of employees changes as time passes and employees gain more experience on

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

the job. New employees are motivated to learn the required skills of the job to impress their supervisors as well as justify their being hired. Over a period of time the employee becomes experienced and motivation to justify their being hired becomes less important. Different personality traits are better predictors of performance at these different stages of transition within the workplace (Helmreich et al., 1986; Kanfer & Ackerman, 1989). As a result, smokers with a performance orientation are expected to perform better (i.e., higher quit rates) while enrolled in a formal treatment program. Success rates among smokers with a performance orientation are expected to decline as time since termination of the formal treatment program increases. Conversely, smokers with a learning orientation are expected to perform better at long-term follow-up as they gain experience with the process of quitting. Thus, personality is predicted to interact with the situation such that certain individuals are predicted to have better short-term success, while others are predicted to have better long-term success. This hypothesis is based partly on the expectation that individual differences in motivation orientations will influence the types of reactions people have to lapses and relapses.

1.7 Individual Differences in Reactions to Relapse

Initial behavior change, while being difficult enough, is more easily accomplished compared to the maintenance of the behavior change (e.g., smoking cessation and weight loss). As many as 80% or more of ex-smokers experience relapse (Smith & Fiore, 1999). As a result, considerable research attention has been focused on efforts to prevent relapse among smokers who have successfully quit. Interestingly, people differ in how they respond to an initial lapse. Specific cognitive and affective response patterns have been observed to be related to an increased occurrence of full-blown relapse (i.e., regression to

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

baseline smoking rates). An ex-smoker who attributes a lapse to internal, stable, and uncontrollable causes is likely to experience negative emotion and decrements in self-efficacy (Marlatt & Gordon, 1985; Ockene et al., 2000). Stable attributions negatively affect an individual's expectancy of success (Eiser, van der Pligt, Raw, & Sutton, 1985). This response pattern has been labeled the Abstinence Violation Effect (AVE). Extreme AVEs result from experiencing repeated failures. Such extreme AVEs can result in perceived helplessness by the smoker. The smoker who experiences helplessness does not perceive any relationship between behavior and consequence and this leads to avoidance of future quit attempts (Marlatt & Gordon, 1985). The AVE is most likely to occur when a person adopts a rule or goal that they must observe absolute abstinence from a specific behavior (e.g., smoking, drinking, or overeating). People who make internal, stable, and uncontrollable attributions for even a minor initial lapse are likely to proceed to full-blown relapse. However, it is not clear if certain groups of people are more susceptible to make such deleterious attributions (Eiser et al., 1985; Marlatt & Gordon, 1985; Shiffman, et al., 1997; Shiffman et al., 1996, 2000). To date no known study has explored the possibility that personality may influence the types of attributions smokers make after experiencing an initial lapse.

Variability in AVE intensity across participants (Shiffman et al., 1997) suggests that individual differences may play a role in reaction to relapse. Research in the educational domain suggests that individuals with a performance orientation are likely to attribute failure to a lack of ability and experience negative affect. Performance oriented individuals may even avoid an activity entirely after experiencing failure (Diener & Dweck, 1978, 1980). Thus, a smoker with a performance goal orientation who

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

experiences an initial lapse may be more likely to attribute failure to a lack of willpower. The performance-oriented smoker may be predisposed to an AVE attribution pattern in response to an initial lapse. As a result, full-blown relapse and an abandonment of smoking cessation commitment may be more likely among these smokers. Attributions concerning the controllability of causes for failures are expected to be most influential and salient to motivational goal orientations. Specifically, motivational goal orientation is expected to influence the extent to which someone believes that a cause of behavior is within their control (i.e., malleable). However, motivational goal orientations are also expected to be related to other characteristics of the AVE such as self-efficacy and commitment to the goal or quitting. For example, a performance goal orientation is expected to be inversely related to self-efficacy and goal commitment following negative feedback. To summarize, it is postulated that performance-oriented smokers may be more likely to experience characteristics consistent with an AVE which would result in a helpless response pattern and possible avoidance of future quit attempts.

In contrast, individuals with a learning goal orientation are expected to have a completely different response pattern to failure or, more appropriately, setbacks. Learning-oriented individuals respond to failure with increased effort and improved performance (Dweck & Leggett, 1988). Therefore, a learning-oriented smoker may attribute an initial lapse to controllable factors. For example, a smoker with a learning goal orientation may attribute a lapse to a lack of effort in learning coping skills that may be acquired over time. Health professionals incorporate relapse prevention components, such as reattribution training, within their smoking cessation programs in hopes of increasing abstinence rates (Hospers, Kok, & Strecher, 1990). Those smokers with a

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

learning goal orientation may be predisposed to naturally make the type of attributions that health professionals encourage. Conversely, a performance-oriented smoker will likely attribute lapses and other failures to internal and uncontrollable causes (i.e., ability). Uncontrollable attributions are, in turn, likely to be related to failure to quit.

1.8 Hypotheses

A stronger performance goal orientation is expected to be related to short-term quitting (i.e., relationship between performance orientation and quitting at 1-month follow-up; hypothesis 1). Success rates of smokers with a stronger performance orientation are expected to decline as time since formal counseling treatment increases and as hypothesized extrinsic rewards diminish. Conversely, smokers with a stronger learning orientation are expected to experience increased performance over time as smokers with a stronger learning orientation master skills associated with quitting and as hypothesized intrinsic rewards increase. Specifically, a stronger learning orientation is expected to be related to long-term quitting (i.e., relationship between learning orientation and quitting at 6-month follow-up; hypothesis 2). Such discrepancies in the timing of success between smokers with different goal orientations are expected to result from the changing reward structure of the smoker's environment as well as differences in reactions to failures.

Several predictions can be made regarding differences in response patterns to relapses and failures to quit. Goal orientation is hypothesized to be related to reaction to relapse. Smokers with a strong performance goal orientation are predicted to attribute lapses as well as failures to quit to uncontrollable causes (e.g., lack of willpower), while smokers with a strong learning goal orientation are predicted to attribute such negative

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

feedback to controllable causes (e.g., coping skill deficit). Differences in response patterns resulting from individual differences are likely to correspond to discrepancies in long-term success rates. The relationship between individual differences in goal orientations and long-term success rates is expected to be mediated by self regulatory variables. Specifically, a stronger performance orientation is expected to be related to adoption of uncontrollable attributions, decreased self-efficacy and goal commitment in response to failures. The third study hypothesis will test relationships between motivational goal orientations and proposed self-regulatory variables. See Figure 1 for the proposed order of such mediating variables.

Motivational goal orientations are expected to be differentially related to quitting over time due to changes in the reward structure, which is hypothesized to increase consistency between rewards and personality among learning oriented research participants. An observed change in the perceived rewards for quitting from pre-treatment to 6 months post-treatment is expected. Specifically, it is hypothesized that participants will show a decrease in extrinsically motivated reasons for quitting and an increase in intrinsically motivated reasons for quitting over time (hypothesis 4). Changes in reward type will be assessed through the use of the Reasons for Quitting Scale (Curry et al., 1990). This change affects the consistency between personality and rewards available within the environment (Rummel & Feinberg, 1990). A significant interaction between goal orientation and reward structure is expected to be predictive of quitting (hypothesis 5). Specifically, a positive change in intrinsic reasons for quitting from enrollment to 6-months follow-up is expected to be associated with greater reductions in smoking among participants with a stronger learning goal orientation. Conversely, a

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

positive change in extrinsic reasons for quitting from enrollment to 6-months follow-up is expected to be associated with greater reductions in smoking among participants with a stronger performance goal orientation.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Chapter 2: Methods

2.1.1 Participants

Individuals seeking smoking cessation services at either (a) a health center, located on a university campus, or (b) a local public health agency were given the opportunity to participate in the current study. Both agencies were located within a mid-sized city in the western United States. Nearly all clients informed of the study by counselors at the two sites agreed to participate. A total of 114 research participants completed consent forms and agreed to participate in the current study.

2.1.2 Health Center/ College Sample

Fifty-three percent of the sample was recruited from the health center located on the university campus. Average age among the college sample was 23.29. Fifty-eight percent of the college sample was female. Average number of years smoking was 7.14. Average number of cigarettes per day at study enrollment was 14.85. Thirteen percent of the college sample reported using a formal smoking cessation program in the past. Research participants recruited from the college campus health center averaged 3.65 counseling sessions by the six-month follow-up. Average scores on the Learning and Performance Goal Orientation Scales were: 4.72 and 4.18, respectively. Average scores on the Intrinsic and Extrinsic Reasons for Quitting Scales were: 4.00 and 2.97, respectively.

2.1.3 Public Health Agency/ General Adult Population

Forty-seven percent of the sample was recruited from the public health agency. Average age among the general population sample was 41.19. Thirty-nine percent of the

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

general population sample was female. Average number of years smoking was 23.50. Average number of cigarettes per day at study enrollment was 17.85. Seventeen percent of the general population sample reported using a formal smoking cessation program in the past. Research participants recruited from the public health agency averaged 3.16 counseling sessions by the six-month follow-up. Average scores on the Learning and Performance Goal Orientation Scales were: 4.71 and 4.34, respectively. Average scores on the Intrinsic and Extrinsic Reasons for Quitting Scales were: 4.31 and 3.08, respectively.

2.1.4 Significant Differences Between Recruitment Sites

Research participants recruited from the public health agency were significantly older, $t(111) = -12.88, p < .05$, and smoked for significantly more years, $t(111) = -10.86$, $p < .05$, compared to participants recruited from the college campus health center. In addition, participants recruited from the public health agency scored significantly higher on the Intrinsic Reasons for Quitting Scale, $t(112) = -2.17, p < .05$. However, research participants recruited from the college campus health center and the public health agency did *not* differ in baseline smoking rate, Motivational Goal Orientation Scale scores, or Extrinsic Reasons for Quitting Scale scores. While more males were recruited from the public health agency, the difference was *not* significant. Finally, the number of smoking cessation counseling sessions that research participants attended was not significantly different between the two recruitment sites.

2.1.5 Total Sample

Ninety-eight percent of research participants reported their ethnicity as non-Hispanic White. Forty-nine percent of research participants reported their gender as

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

female. The average age of the sample was 31.84 years (SD = 11.60). The average number of years smoking among research participants at enrollment was 14.96 (SD = 11.44). The average number of cigarettes per day consumed among research participants prior to enrolling in the current study was 16.29 (SD = 10.31). This rate is lower than many other studies of formal smoking cessation programs that report an average of 27.50 cigarettes per day and an average age of 41 (Garcia-Vera, 2004; Lichtenstein & Glasgow, 1992). Therefore, participants used in the current study are considered to be lighter smokers compared to other studies investigating the smoking cessation process. However, the current sample averaged almost an entire pack of cigarettes per day at the beginning of the study.

During their first meeting with a counselor, 91% of the sample reported smoking in the past 24 hours. Fifteen percent of the sample reported using a formal smoking cessation program in the past. Among those who reported using a formal smoking cessation program in the past, participants reported using an average of 1.63 (SD = 1.26) formal programs to aid quitting attempts prior to enrolling in the current study. During the course of the study most participants attended smoking cessation counseling sessions. Participants reported attending an average of 2.97 counseling sessions by the 1-month follow-up, 4.34 counseling sessions by the 3-month follow-up, and 6.58 counseling sessions by the 6-month follow-up. Rates of quitting were fairly typical of most cessation programs (The Tobacco Use and Dependence Clinical Practice Guideline Panel, 2000). Ninety-one percent of participants were smoking at study enrollment, 60% at the 1-month follow-up, 60% at the 3-month follow-up, and 70% at the 6-month follow-up.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

2.2 MEASURES

At the first measurement point during study enrollment research participants completed the 20-item Motivational Goal Orientation Scale (Button et al., 1996). The Motivational Goal Orientation Scale uses 10 items to assess the Learning Goal Orientation and 10 items to assess the Performance Goal Orientation. Research participants were asked to indicate the extent to which scale items described them. Response scales ranged from "very untrue of me" to "very true of me". The Goal Orientation Scale assesses both the Learning and Performance motivational personality traits. Reliability of the Learning Goal Orientation was .85, while the reliability of the Performance Goal Orientation was .82. Moreover, the reliability and validity of the Motivational Goal Orientation Scale has been well documented by past research (Button et al., 1996). Table 1 provides reliabilities for each of the scales used in the current study. A copy of both the enrollment and follow-up surveys appear in the appendix.

The Learning and Performance Orientations are considered to be orthogonal constructs. Hence, individuals may have a high score on only one Orientation scale, have a high score on both Orientation scales, or have a low score on both Orientations scales. Principal components analysis was used to determine the structural validity of the scale. Principal components analysis with varimax rotation was interpreted with a two-component solution. Specifically, scree test results suggested two interpretable principal components. Moreover, the first two principal components each had eigenvalues greater than four. Additional principal components beyond a two component structure each added less than one eigenvalue. Results suggested that Motivational Goal Orientation scale items loaded upon their intended scale constructs. Item number 55, "When I have

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

difficulty solving a problem, I enjoy trying different approaches to see which one will work" was excluded from the Learning Goal Orientation scale due to its low loading upon the Learning Goal Orientation principal component. The rotated principal components solution is presented in Table 2. The two orthogonal principal components explained 42.22% of the variance of the scale items.

At each of the four measurements, participants completed the 20-item Reasons for Quitting Scale (RFQ; Curry et al., 1990). The Reasons for Quitting Scale includes four separate subscales including two intrinsic reasons for quitting subscales (Health Concerns and Self-Control) and two extrinsic reasons for quitting subscales (Immediate Reinforcement and Social Pressure; see Table 3 for a list of scale items). Research participants were asked to indicate the extent to which scale items or reasons for quitting described them. Response scales ranged from "very untrue of me" to "very true of me". The factor structure and reliability of the Reasons for Quitting Scale have been well established in past research (Curry et al., 1990). Reliabilities for the Intrinsic and Extrinsic Reasons for Quitting scales at study enrollment were: .77 and .68, respectively.

At each of the four measurements, research participants also completed 11 questions designed to assess participants' self-efficacy in resisting the urge to smoke in various situations (total of 4 items; e.g., when drinking tea or coffee or when with friends who smoke) and when experiencing different emotions (total of 7 items; e.g., when you feel depressed or when you feel angry). Principal components analysis with oblimin rotation of the 11 self-efficacy items at study enrollment was interpreted with a two component solution that explained 55.63% of the variance of the items. Specifically, scree test results suggested two interpretable principal components. Additional principal

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

components beyond two did not have eigenvalues greater than one. Items assessing mood self-efficacy loaded upon the mood self-efficacy construct, while items assessing situational self-efficacy loaded upon the situational self-efficacy construct. The rotated principal components solution is presented in Table 4. Reliabilities of mood and situational self-efficacy scales at study enrollment were: .87 and .76, respectively.

At each of the four measurements, research participants also completed three questions assessing the extent to which participants were committed to the goal of quitting. Reliability of the goal commitment scale at study enrollment was .89. Finally, research participants completed questions at all four measurement points assessing (a) the number of smoking cessation counseling sessions attended, (b) the average number of cigarettes consumed per day in the past seven days, and (c) smoking in the past 24 hours.

At each of the three follow-up measurements, research participants completed a series of attribution scales. Specifically, research participants completed an open-ended question to indicate the one major cause for having smoked (or not smoked) since the last survey assessment. Participants then completed attribution scales related to the cause they identified. That is, participants who were able to quit smoking assessed the reason for their *ability* to quit along three dimensions (i.e., locus of causality, stability, and controllability). Participants who were unable to quit assessed the reason for their *inability* to quit along the same three dimensions. Thus, participants rated or attributed their reasons for being able to quit (or unable to quit) on nine questions assessing: (a) locus of causality (i.e., "is the cause: totally due to other people or circumstances or totally due to me"), (b) locus of stability (i.e., "is the cause: something that is variable over time or stable over time"), and (c) locus of controllability (i.e., "is the cause:

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

controllable by you or other people or uncontrollable by you or other people"). The format of assessment was adapted from the Depressive Attributional Style scale (Seligman, Abramson, Semmel, & von Baeyer, 1979). Reliabilities at each measurement are provided in Table 1.

2.3 Procedures

Research participants completed the first survey at enrollment and prior to completing their first smoking cessation counseling session. Research participants provided their personal contact information while completing the first survey. The remaining three follow-up surveys were mailed directly to research participants. Research participants completed follow-up surveys one-, three-, and six-months after enrolling in the study. A four digit unique identifier was automatically assigned to each research participant by completing a numbered survey at enrollment. Follow-up surveys were printed with the four digit unique identifier code prior to mailing surveys to research participants. Research participants mailed completed follow-up surveys to the researcher in provided self-addressed and stamped envelopes. Research participants received $10 for completing each survey and an additional $10 for the 6-month follow-up survey if they completed both of the previous two follow-up surveys at 1- and 3-months.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Chapter 3: Results

3.1 Dropout and Missing Data

Of the 114 research participants who completed the first study survey, 70 participants (61% response rate) completed the second survey at the one-month follow-up, 58 participants (51% response rate) completed the third survey at the three-month follow-up, and 67 participants (59% response rate) completed the fourth survey at the six-month follow-up. All three follow-up surveys were mailed directly to research participants regardless of whether the previous survey had been completed. Research participants who missed at least one of the follow-up surveys were compared to research participants who completed all three follow-up surveys. Research participants with missing data (i.e., not completing at least one follow-up survey) did not differ from research participants with no missing data on baseline smoking (i.e., average number of cigarettes per day in the past week). Similarly, research participants with missing data did not differ from research participants with no missing data on smoking rates at the three follow-up measurement points. Research participants who completely dropped out of the study (i.e., only completed the enrollment survey) did not significantly differ from those who completed at least one follow-up survey on baseline smoking. Motivational Goal Orientation was unrelated to dropping out of the study or missing data at any of the follow-up measurement points.

3.2 Descriptive Statistics

Tables 5 and 6 provide descriptive statistics and interrelationships between study variables from study enrollment. As can be seen from Table 6, the Learning and Performance Goal Orientation scales were unrelated. The Performance Goal Orientation

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

scale was significantly related to mood self-efficacy. Specifically, a stronger Performance Goal Orientation was related to significantly less confidence in resisting urges to smoke in various emotional states. The Learning Goal Orientation scale was significantly related to Intrinsic RFQ, situational self-efficacy, and goal commitment. Specifically, a stronger Learning Goal Orientation was related to significantly more intrinsic reasons for quitting, significantly more confidence in resisting urges to smoke in various physical situations, and significantly more commitment to the goal of quitting.

The positive relationship between the Intrinsic and Extrinsic RFQ scales suggested that a person who endorsed several Intrinsic Reasons for Quitting would similarly endorse several Extrinsic Reasons for Quitting. Intrinsic RFQ was also related to goal commitment. Specifically, commitment to the goal of quitting increased significantly as a person endorsed more intrinsic reasons for quitting.

Situation and mood self-efficacy were significantly related in a positive direction such that confidence in resisting urges to smoke in one domain (e.g., various emotional states) translated into confidence in the other domain (e.g., physical situations) as well. Both domains of self-efficacy were positively related to goal commitment. Specifically, confidence in the ability to resist the urge to smoke was significantly related to a stronger commitment to the goal of quitting.

3.3 Change in Smoking Rate and Quit Rates

Research participants were asked if they had smoked a cigarette in the past 24 hours at study enrollment. Of the 113 participants who answered that question at study enrollment, 9 (8%) reported to have quit smoking. At the one-month follow-up, 28 (40%) of the research participants who completed the second study survey reported

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

quitting smoking. At the three-month follow-up, 23 (40%) of the research participants who completed the third study survey reported quitting smoking. At the six-month follow-up, 20 (30%) of the research participants who completed the fourth and final study survey reported quitting smoking. Seven research participants (6%) quit by the one-month follow-up and maintained abstinence through the six-month follow-up (continuous abstinence).

The mean number of cigarettes smoked per day among research participants was: 16.29 at enrollment, 7.37 at one-month, 9.53 at three-months, and 10.98 at six-months. Repeated measures General Linear Modeling (GLM) was used to model change in smoking rate at study enrollment, one-month, and six-month follow-ups. Data from the three-month follow-up was *not* included within the model due to the low response rate at that follow-up time point. In addition, study enrollment, one-month, and six-month follow-up represent the most important time points for modeling baseline smoking rates, as well as short- and long-term smoking reductions and quit rates. Results from the repeated measures GLM suggested a significant change in smoking rate across all three survey time points, $\Lambda = .64$, $F(2, 52) = 14.60$, $p < .05$. The mean number of cigarettes consumed among the 54 research participants who completed surveys at all three assessments was: 15.07 (T1), 6.78 (T2), and 9.94 (T4). Post hoc comparisons of smoking rate at each of the three time points suggested significant differences in smoking rates between study enrollment and the one-month follow-up, as well as between study enrollment and the six-month follow-up. However, the difference in smoking rates between one- and six-months follow-up was *not* significant.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

A second repeated measures General Linear Model (GLM) was used to model change in smoking rate at study enrollment, one-month, and six-month follow-up exclusively among research participants who continued to smoke throughout the study. Results were based upon 26 research participants who completed the enrollment, one-month, and six-month follow up surveys and continued to smoke throughout the duration of the study. Results from the repeated measures GLM suggested a significant change in smoking rate across three survey time points, $\Lambda = .64$, $F(2, 24) = 6.77$, $p < .05$. The mean number of cigarettes consumed at each time point was: 16.31 (T1), 10.15 (T2), and 15.70 (T3). Post hoc comparisons of smoking rate at each of the three time points suggested significant differences in smoking rates between study enrollment and the one-month follow-up, as well as between one- and six-month follow-up. However, the difference in smoking rate between study enrollment and the six month follow-up was *not* significant. A comparison between the total sample and continuous smokers on change in smoking rate yielded important findings. Namely, continuous smokers experienced significant reductions in smoking rate by the one-month follow-up, but resumed baseline smoking rates by the six-month follow-up. Thus, the significant reductions in smoking rates observed in the full sample at the six-month follow-up can be attributed to participants who were able to engage in a quit attempt during the course of the study. Figure 2 illustrates change in smoking rate across the three survey time points among all research participants and the sub-sample of those who continued to smoke throughout the study.

Baseline smoking and quit rates were similar between males and females. The mean number of cigarettes consumed at study enrollment was: 16.26 (SD = 10.73) for males and 16.33 (SD = 9.94) for females. Similarly, there was little difference in quit

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

rates between males and females. Specifically, only 7% (4 of 58) of males reported to have quit smoking by the enrollment survey compared to 9% (5 of the 50) of females. Quit rates for males at the one- and six-month follow-up were: 39% (13 of 33) and 37% (11 of 30), respectively. Quit rates for females at the one- and six-month follow-up were: 42% (15 of 36) and 25% (9 of 36), respectively. Gender was unrelated to ability to quit at the one-, χ^2 (1, N = 69) =.04, p >.05, and six-month follow-up, χ^2 (1, N = 66) = 1.06, p > .05.

3.4 Cross-sectional Analysis at Enrollment

Baseline smoking rate (i.e., average number of cigarettes per day in the past week) was regressed on several predictor variables from the enrollment survey to determine relationships between various predictor variables and baseline smoking. Data from 112 research participants were included in the analysis. Recruitment site, gender, years smoking, Performance Goal Orientation, Learning Goal Orientation, Intrinsic Reasons for Quitting, Extrinsic Reasons for Quitting, mood self-efficacy, situational self-efficacy, and goal commitment were used to explain baseline smoking rate. Results are provided in Table 7. The overall model was not significant and explained 10% of the variance in baseline smoking rate, F (10, 111) = 1.09, p >.05 (R^2= .10). No variable at study enrollment was related to baseline smoking.

3.5 Inferential Statistics

3.5.1 Motivational Goal Orientations and Smoking Behavior

The following series of analyses address the first and second study hypotheses predicting differential relationships between Motivational Goal Orientations and short- and long-term smoking behaviors. Namely, a stronger Performance Goal Orientation

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

was expected to be related to evidence of early quitting (i.e., at the one-month follow-up), while a stronger Learning Goal Orientation was expected to be related to evidence of successful quitting over time (i.e., at the six-month follow-up). Smoking rate and quit rates were both used as dependent variables in analyses testing the first and second study hypotheses.

Linear regression was used to test for a relationship between the Performance Goal Orientation scale and smoking rate at the one-month follow-up. Recruitment site and baseline smoking rate were both entered into the regression model as statistical controls along with the Performance Goal Orientation scale. The regression model explaining smoking rate at the one-month follow-up was significant, $F(3, 67) = 4.89$, $p < .05$. Research participants recruited from the college campus smoked significantly more cigarettes per week at the one-month follow-up compared to participants recruited from the public health agency, $\beta = -.26$, $t = -2.23$, $p < .05$. Baseline smoking rate was significantly related to smoking rate at the one-month follow-up, $\beta = .40$, $t = 3.45$, $p < .05$. Contrary to expectations, the Performance Goal Orientation was *not* related to smoking rate at the one-month follow-up, $\beta = .01$, $t = .05$, $p > .05$. Results are presented in Table 8.

Logistic regression was used to test for a relationship between the Performance Goal Orientation scale and quit rates at the one-month follow-up. Recruitment site and baseline smoking rate were both entered into the logistic model as statistical controls along with the Performance Goal Orientation scale. The logistic model was *not* significant in explaining quit rates at the one-month follow-up, $\chi^2(3, N = 68) = 5.36$, $p > .05$. Research participants recruited from the public health agency were significantly

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

more likely to be quit at the one-month follow-up compared to participants recruited from the college campus, $\beta = 1.12$, OR = 3.08, $p < .05$. Contrary to expectations, the Performance Goal Orientation scale was *not* related to quit rates, $\beta = -.15$, OR = .86, $p > .05$. Results are presented in Table 8.

Linear regression was used to test for a relationship between the Learning Goal Orientation and smoking rate at the six-month follow-up. Recruitment site and baseline smoking rate were both entered into the regression model as statistical controls along with the Learning Goal Orientation scale. The regression model explaining smoking rate at the six-month follow-up was significant, $F(3, 65) = 8.08$, $p < .05$. Research participants recruited from the college campus smoked significantly fewer cigarettes per week at the six-month follow-up compared to participants recruited from the public health agency, $\beta = .23$, $t = 2.11$, $p < .05$. In addition, baseline smoking rate was positively related to smoking rate at the six-month follow-up, $\beta = .45$, $t = 4.05$, $p < .05$. Contrary to expectations, the Learning Goal Orientation scale was unrelated to smoking rate at the six-month follow-up, $\beta = .10$, $t = .88$, $p > .05$. Results are presented in Table 10.

Logistic regression was used to test for a relationship between the Learning Goal Orientation scale and quit rates at the six-month follow-up. Recruitment site and baseline smoking rate were both entered into the logistic model as statistical controls along with the Learning Goal Orientation scale. The logistic model was significant in explaining quit rates at the six-month follow-up, $\chi^2(3, N = 66) = 12.88$, $p < .05$. Baseline smoking rate was inversely related to quit rates at the six-month follow-up, $\beta = -.11$, OR = .89, $p < .05$. Specifically, lower baseline smoking rates were associated with higher quit rates at

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

the six-month follow-up. Contrary to expectations, the Learning Goal Orientation scale was *not* related to quit rates at the six-month follow-up, $\beta = -.83$, OR = .44, $p < .05$. Results are presented in Table 11.

Multivariate models were then used to investigate the relationship between Motivational Goal Orientations and change in smoking rate across three survey points (i.e., enrollment, one-, and six-month follow-up). The two Motivational Goal Orientation scales as well as the recruitment site variable were entered into the repeated measures GLM to determine the relationship between Motivational Goal Orientations and change in smoking rate. Contrary to expectations, neither of the Motivational Goal Orientations was related to change in smoking rate across the three survey time points, $F(1, 50) = 1.17, p > .05$ for Learning and $F(1, 50) = .11, p > .05$ for Performance. Specifically, the test of within-subjects effects that investigates change in smoking rate at each survey point at different levels of the Performance scale was not significant, nor was the test for the Learning scale (i.e., test for parallelism; Tabachnick & Fidell, 2001). However, the Performance Goal Orientation was positively related to the average number of cigarettes consumed by research participants over the three data collection waves collectively, $F(1, 50) = 4.05, p < .05$. Post hoc comparisons suggested that participants with a high Performance Goal Orientation (classifications were based upon a mean split of the Performance Goal Orientation scale; M = 4.25) consumed an average of 4.26 more cigarettes per day over the duration of the study than did participants with a low Performance Goal Orientation. In contrast, learning orientation was unrelated to the average number of cigarettes smoked per day, $F(1, 50) = .27, p > .05$. Figure 3

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

illustrates the difference in the average number of cigarettes consumed across the three survey time points as a function of the Learning and Performance Goal Orientations.

Collectively, results suggested that Motivational Goal Orientations were *not* related to changes in smoking rates among clients in formal smoking cessation programs. Specifically, univariate analyses suggested that there was no relationship between Goal Orientation and smoking rate after beginning a formal smoking cessation program. However, multivariate tests, which are generally more sensitive analyses (Tabachnick & Fidell, 2001), suggested that the Performance Goal Orientation was related to significantly more smoking over the entire period of study.

3.5.2 Motivational Goal Orientations and Attributions

The next series of analyses address the third hypothesis of the study. Namely, Motivational Goal Orientations were expected to be related to adoption of deleterious attributions for failing to quit smoking. Research participants who were smoking at each follow-up assessment indicated the extent to which the reason for their inability to quit was due to factors that were controllable versus uncontrollable. The Learning Goal Orientation was expected to be related to adoption of controllability attributions, while the Performance Goal Orientation was expected to be related to adoption of uncontrollability attributions. A total of 39 participants who were still smoking at the one-month follow-up completed the attribution scale. A total of 42 participants who were still smoking at the six-month follow-up completed the attribution scales. Table 11 presents results from two linear regression models used to test for relationships between Motivational Goal Orientations and attributions along the control dimension (e.g., controllable – uncontrollable) at the one- and six-months follow-up, respectively.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Recruitment site was entered into each regression model as a statistical control. As expected, the one-month follow-up results suggested that a stronger Learning Goal Orientation was significantly related to attributing an inability to quit smoking to controllable causes, $\beta = -.35$, $t = -2.11$, $p < .05$, however this relation was not significant at 6 months, $\beta = -.05$, $t = -.33$, $p > .05$. Contrary to expectations, the Performance Goal Orientation scale was unrelated to controllability attributions at the one-month, $\beta = -.35$, $t = .76$, $p > .05$, and six-month follow-up, $\beta = .07$, $t = .46$, $p > .05$.

3.5.3 Motivational Goal Orientations following failure feedback

The following analyses continue to address the third hypothesis of the study which predicted that the Performance Goal Orientation would be related to a decrease in commitment to the goal of quitting following negative feedback. In addition, a Performance Goal Orientation was expected to be negatively related to other intrapersonal variables such as self-efficacy following negative feedback. Thirty-four of 42 people who were smoking at the one-month follow-up (i.e., unable to quit) completed the six-month follow-up. Linear regression was used to predict the goal commitment of those participants at the six-month follow-up with the Motivational Goal Orientation scales while controlling for recruitment site and goal commitment at study enrollment. Results are presented in Table 13. Results suggested that the Performance Goal Orientation scale was significantly related to goal commitment at the six-month follow-up, $\beta = -.44$, $t = -2.45$, $p < .05$. As expected, a stronger Performance Goal Orientation was related to significantly lower commitment to the goal of quitting at the six-month follow-up among research participants who were unable to quit at the one-month follow-up. Motivational Goal Orientations explained 24% of the variance in goal commitment.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Linear regression analysis was used to predict mood self-efficacy at the six-month follow-up with the Motivational Goal Orientation scales while controlling for recruitment site and mood self-efficacy at study enrollment. As expected, the Performance Goal Orientation was significantly related to mood self-efficacy at the six-month follow-up, $\beta = -.38$, $t = -2.39$, $p < .05$. As expected, a stronger Performance Goal Orientation was related to significantly lower confidence in the ability to resist urges to smoke under various emotional states among research participants who were unable to quit at the one-month follow-up. Motivational Goal Orientations explained 38% of the variance in mood self-efficacy. Results are presented in Table 14.

The previous analyses established relationships between Performance Goal Orientation and important intrapersonal variables responsible for self-regulation in the ability to quit smoking. The following analysis tests the hypothesis predicting a relationship between Motivational Goal Orientations and long-term success rates at quitting following early failures. Logistic regression was used to investigate the long-term smoking behavior of 34 research participants who were unable to quit smoking by the one-month follow-up and who also completed the six-month follow-up survey. In fact, 8 of the 34 participants within this group were able to quit by the six month follow-up. Logistic regression was used to predict quit rates at the six-month follow-up among participants who reported continued smoking at the one-month follow-up. Quitting at the six-month follow-up was regressed on the Motivational Goal Orientation scales and recruitment site. The model explaining quit rates at the six-month follow-up was significant, χ^2 $(3, N = 34) = 12.58$, $p < .05$ As expected, results suggested that the Performance Goal Orientation Scale was significantly related to quit rates at the six-

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

month follow-up, β = -2.39, OR = .09, p <.05. Results suggested that a stronger Performance Goal Orientation was related to an inability to quit over time among participants who experience early quitting failures. Results are presented in Table 15.

3.5.4 Mediated model: Motivational Goal Orientations, self-regulation, and smoking cessation

Previous analyses demonstrated significant relationships between the Performance Goal Orientation scale, mood self-efficacy, and long-term success at smoking cessation among participants who experienced early failures at quitting. The following analyses test the ability of mood self-efficacy to mediate the significant relationship between the Performance Goal Orientation scale and long-term success at quitting among participants who experienced early failures at quitting. Consistent with the procedures suggested by Baron and Kenny (1986), performance goal orientation was entered into the regression model explaining quitting prior to the entry of mood self-efficacy. A reduction of the standardized beta weight subsequent to the inclusion of self-efficacy is an indication of mediation. Procedures, identified by Holmbeck (2002), for conducting post-hoc probing of mediated effects were used to test the extent to which self-efficacy mediated the relationship between personality and smoking. Procedures identified by Holmbeck provide calculations to determine the percent of variance in the relationship between an exogenous variable (Performance Orientation) and a criterion (quitting) that is mediated through a third variable (mood self-efficacy). In other words, one is able to statistically determine the percent of the total effect that is due to the indirect effect.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

The Performance Goal Orientation scale and recruitment site were entered into the first block of the logistic regression model predicting quitting at the six-month follow-up. This Performance Goal Orientation and recruitment site model was significant in explaining success at quitting at six-months, $\chi^2 (2, N = 34) = 12.58, p < .05$. The Performance Goal Orientation scale was significantly related to success at quitting, $\beta = -2.39$, OR = .09, $p < .05$. Mood self-efficacy was entered into the next block of the logistic regression model predicting quitting success. The addition of the mood self-efficacy variable resulted in a significant improvement in model fit, $\chi^2 (1, N = 34) = 7.33$, $p < .05$. In addition, the overall model was significant in explaining quitting success at the six-month follow-up among participants who experienced early failure at quitting, $\chi^2 (4, N = 34) = 19.90, p < .05$. Mood self-efficacy was significantly related to quitting success ($\beta = 2.00$, OR = 7.41, $p < .05$), while the Performance Goal Orientation scale changed from being significantly related to unrelated to quitting success, $\beta = -.93$, OR = .39, $p > .05$. Post-hoc probing of the mediation suggested that the indirect effect through mood self-efficacy was significant (z = 1.98, $p < .05$). Moreover, 55% of the performance goal orientation and quitting relationship was accounted for by mood self-efficacy. Thus, as expected, mood self-efficacy partially mediated the relationship between performance goal orientation and quitting. Results are presented in Table 16.

In summary, results suggested that Motivational Goal Orientations may be related to smoking behavior as well as other important intrapersonal variables following early failures at quitting. Specifically, individuals with a stronger Performance Goal Orientation had significantly less confidence in their ability to resist urges to smoke as well as significantly less commitment to the goal of quitting. Similarly, individuals with

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

a stronger Performance Goal Orientation who were unable to quit by the one-month follow-up were significantly less likely to be quit at the six-month follow-up. As expected, individuals with a stronger Performance Goal Orientation had a significantly different response to negative feedback which impacted their long-term ability to quit. Moreover, the relationship between the Performance Goal Orientation scale and long-term quitting success was mediated by mood self-efficacy.

3.6 CHANGE IN RFQ

The next series of analyses address the fourth study hypothesis which predicted that individuals attempting to quit smoking would experience a significant change in their reward structure. Reward structure was assessed with the two dimensions of the Reasons for Quitting scale. It was hypothesized that extrinsic rewards or reasons for quitting would substantially decline over time, while intrinsic rewards or reasons for quitting would substantially increase over time. Two separate models were analyzed to test for change in the Intrinsic and Extrinsic dimensions of the Reasons for Quitting scale while controlling for recruitment site. Analyses were based upon data from 53 research participants who completed the Reasons for Quitting scale at enrollment, one-, and six-month follow-up. Repeated measures General Linear Model was used to test for change in reward structure. Contrary to expectations, results suggested that there was no significant change in the Intrinsic RFQ scale, $F\ (2, 50) = .48, p > .05$. Mean scores on the Intrinsic RFQ scale were: (T1) 4.23, (T2) 4.17, (T4) 4.13. However, as expected, results suggested a significant change in the Extrinsic RFQ scale, $F\ (2, 50) = .6.16, p < .05$. Mean scores on the Extrinsic RFQ scale were: (T1) 3.07, (T2) 2.94, (T4) 2.76. Bonferroni adjustments for multiple comparisons were used in making post hoc

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

comparisons of Extrinsic RFQ scores across the three survey points. Post hoc comparisons suggested a significant decrease in extrinsic rewards between study enrollment and the six month follow-up. All other comparisons of the Extrinsic RFQ scale were not significant. Figure 4 illustrates change in Reasons for Quitting.

3.7 Motivational Goal Orientations and RFQ change interactions

The following analyses test the fifth study hypothesis predicting that Motivational Goal Orientations would moderate the relationship between changes in extrinsic reward structure and changes in smoking rate. An interaction term between the Performance Goal Orientation and change in Extrinsic RFQ (T4-T1) was entered into a repeated measures GLM to test for a relationship with change in smoking rate (T1, T2, and T4). The Performance x change in Extrinsic RFQ interaction term was entered into the model along with the main effect Performance Goal Orientation and Extrinsic RFQ change terms. Contrary to expectations, results suggested that the Performance Goal Orientation did not moderate the relationship between change in Extrinsic RFQ and change in smoking rate, $F(2, 49) = .61, p > .05$. Main effects for both the Performance Goal Orientation and change in Extrinsic RFQ were not significant, $F(2,49) = .76, p > .05$ and $F(2,49) = .79, p > .05$, respectively. A similar model was used to determine if the Learning Goal Orientation moderated the relationship between changes in intrinsic reward structure and changes in smoking rate. An interaction term between the Learning Goal Orientation scale and change in Intrinsic RFQ (T4-T1) was entered into a repeated measures GLM to test for a relationship with change in smoking rate. The Learning x change in Intrinsic RFQ interaction term was entered into the model along with the main effect Learning Goal Orientation and Intrinsic RFQ change terms. Contrary to

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

expectations, results suggested that the Learning Motivational Goal Orientation did not moderate the relationship between change in Intrinsic RFQ and change in smoking rate, $F(2, 49) = 1.27, p > .05$. Main effects for both the Learning Goal Orientation and change in Intrinsic RFQ were not significant, $F(2,49) = .77, p > .05$ and $F(2,49) = 1.25, p > .05$, respectively.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Chapter 4: Discussion

4.1 Summary

Nicotine addiction researchers have suggested a need for more basic research investigating the smoking cessation process (Niaura & Abrams, 2002; Shiffman, 1993). Shiffman identified conditions necessary to achieve the unrealized goal of matching patients to tailored treatment protocols. First, research needs to identify relevant dimensions that reliably differentiate individuals. Next, development of differential tobacco treatment protocols should be based upon these dimensions and designed to systematically interact with patient characteristics to enhance smoking abstinence rates. The current study establishes both theoretical and empirical support for the use of goal orientations in the smoking cessation process. Implications include a taxonomic structure for the development of patient-treatment matching as well as applications of results to other health-related behaviors such as weight loss programs.

4.2 Theoretical Implications

Traits identified by goal orientation theory were predicted to be related to behavioral and intrapsychic aspects of the smoking cessation process. A theoretical model was proposed (see Figure 1) which suggested that different motivational orientations would be associated with greater success. Specifically, a performance goal orientation was expected to be related to early quit attempts, while a learning goal orientation was expected to be related to long-term quitting. Moreover, trait-based differences in the interpretation of negative feedback were expected to partially explain differential relationships between motivational goal orientations and quitting. Thus, self-

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

regulatory variables were expected to mediate the relationship between motivational goal orientations and quitting. In addition, changes in the environmental reward structure were expected to interact with motivational goal orientations to explain differential relationships between motivational goal orientations and quitting. Although not all elements of this theoretical model were supported by the data, analyses provide a convergence of findings to support the use of the Performance Goal Orientation in future research that investigates the smoking cessation process.

Motivational Goal Orientations were observed to have a dynamic relationship with quitting. Motivational Goal Orientations were related to baseline rates of smoking, assessed at study enrollment, and predicted long-term success rates of quitting following negative feedback. Moreover, Motivational Goal Orientations were related to several self-regulatory variables following negative feedback. Finally, the relationship between Motivational Goal Orientations and long-term success was mediated by mood self-efficacy.

Research participants were informed of the current study and completed an initial battery of questionnaires minutes prior to their first smoking cessation counseling session. Contacting a counselor and attending tobacco treatment counseling suggests that most participants were in the preparation or action stage of change (Prochaska & DiClemente, 1983). In fact, nine participants were actually quit at study enrollment, which suggests that these participants were in the action stage of change. Thus, between person differences likely exist in terms of preparation for quitting.

Results suggested that a learning goal orientation was related to enhanced preparation for quitting. Past research has consistently demonstrated that degree of

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

nicotine dependence, generally assessed by average number of cigarettes per day, is inversely related to long-term ability to quit. Similarly, past use of formal smoking cessation programs has been found to be inversely related to smoking cessation rates (Lichtenstein & Glasgow, 1992). Analysis of bivariate correlations among variables at study enrollment indicated that a LGO was significantly related to confidence in resisting urges to smoke as well as commitment to the goal of quitting. Therefore, results suggested that participants with a stronger LGO may have been better prepared to quit.

Discrepancy between one's goal (i.e., quitting smoking) and one's current performance translates into motivation aimed at reducing that discrepancy (Bandura, 1986). Goal-performance discrepancy may produce motivation to increase effort, revise goals, or withdraw from a task (Austin & Vancouver, 1996). Results from the current study suggested that, consistent with the hypotheses, a performance goal orientation was related to a deleterious interpretation of negative feedback (i.e., goal-performance discrepancy). Specifically, a stronger Performance Goal Orientation (PGO) was related to an inability to achieve long-term quitting success among those who failed at attempting to quit early. Interestingly, a relationship between the PGO and quitting emerged only after participants received feedback concerning performance. Participants with a stronger PGO responded negatively to negative feedback which suggested that their current performance was not sufficient. A stronger PGO was also observed to be inversely related to several self-regulatory variables at the six-month follow-up.

As expected, participants with a stronger PGO who were unable to quit by the one-month follow-up were significantly less confident in resisting urges to smoke and engaged in significant downward revision of their goals by the six-month follow-up.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

These results are consistent with past research within the fields of education and organizational psychology, which demonstrate a tendency among individuals with a stronger PGO to withdraw from difficult tasks (Diener & Dweck, 1978; 1980). Withdrawal from challenging goals subsequent to negative feedback is theoretically linked to a PGO because individuals with a PGO adopt an entity theory concerning ability. As a result, among individuals with stronger PGO, negative feedback concerning performance implicates one's innate ability and sets limitations upon future performance (Diener & Dweck, 1978). Individuals with a stronger PGO may have engaged in maladaptive self-regulatory strategies, such as reducing commitment at quitting, to avoid threats of failure. Feedback indicating failures at attempts to quit smoking apparently confirm fears among individuals with a stronger PGO of a "lack of willpower" to quit smoking. Thus, smokers with a stronger PGO may benefit from relapse prevention treatment.

Results also indicated that, as expected, mood self-efficacy mediated the relationship between PGO and long-term success at quitting among participants who received negative feedback at the one-month follow-up. Results from the current study extend findings that self-efficacy mediates the relationship between Motivational Goal Orientations and performance to health-related behaviors. Testing the role of self-efficacy as a process variable for smoking cessation suggests that self-efficacy may provide an opportunity for interventions aimed at increasing smoking cessation rates. Efforts by health educators and counselors that encourage individuals with stronger PGO to set small goals such as smoking reductions and short quit periods (e.g., going through a weekend without smoking) may improve long-term success rates. Achieving small goals

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

would bolster self-efficacy among individuals with a stronger PGO. Similarly, enhancing problem solving skills of smokers with a stronger PGO may yield improved efficacy in identifying situations that were related to urges to smoke. Smokers may also benefit from counseling techniques that help them identify emotional states that precipitate nicotine cravings. Identifying alternative responses to affective states associated with nicotine cravings could help to alleviate those cravings. In sum, a stronger PGO is likely associated with internalizing negative feedback as an indication that the smoker "lacks the willpower" to successfully quit. This is similar to a helpless response pattern in which a person is unable to change their situation as a smoker. In this sense a PGO should be considered a high risk group.

Dweck and colleagues (1995) suggest that incremental (learning) and entity (performance) implicit theories concerning personal attributes generalize to more than simply intelligence. Results suggest that goal orientation theory warrants future investigation and application by health researchers to the smoking cessation process. Results concerning the relationship between goal orientations and the types of attributions made by research participants were equivocal. Specifically, the LGO, as expected, was associated with attributing an inability to quit at the one-month follow-up to controllable causes, while the LGO, contrary to expectations, was unrelated to attributions at the six-month follow-up. The PGO was unrelated to attributions at both the one- and six-month follow-up. Past research in educational settings has demonstrated that students with entity implicit beliefs tend to attribute failures to uncontrollable causes (i.e., ability), while students with incremental implicit beliefs tend to attribute failures to controllable causes (i.e., effort) (Diener & Dweck, 1978; 1980). Hence, a PGO was

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

expected to be related to uncontrollable attributions, while a LGO was expected to be related to controllable attributions among research participants attempting to quit. Future research is necessary to uncover potential relationships between motivational goal orientations and patterns of attributions made by individuals attempting to quit who experience negative feedback. The ability to predict the types of attributions people make after experiencing a relapse would provide scientists and counselors with an opportunity to change such maladaptive cognitive processes.

Relationships between the PGO scale and self-regulatory behaviors as well as smoking behaviors emerged after negative feedback. Current developments in goal orientation theory have suggested that both the Learning and Performance Goal Orientation scales may be divided into approach and avoidance subscales (Radosevich et al., 2004). Future research may attempt to uncover which of these two subscales is responsible for the relationship between the Performance Goal Orientation scale and smoking behavior following negative feedback. It is likely that the avoidance subscale of the Performance Goal Orientation scale is responsible for relationships with outcomes following negative feedback and that the approach (proof) subscale is responsible for relationships prior to feedback. Future research should explore relationships between these Motivational Goal Orientation subscales and health-related behaviors.

Constructs theoretically based upon CET (Deci, 1972; Deci & Ryan, 2000) and developed by Curry (1991) were applied as environmental factors that would systematically interact with motivational goal orientations to influence the smoking cessation process. As hypothesized, extrinsic rewards, as assessed by extrinsic reasons for quitting, experienced significant reductions over the six month period of the study.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Contrary to expectations, intrinsic rewards, as assessed by intrinsic reasons for quitting, did not experience change over the course of the study. In other words, research participants report a significant decline in extrinsic rewards while intrinsic rewards appear to remain unchanged. This pattern of changes in reasons for quitting over time was believed to be important because intrinsic and extrinsic reasons for quitting were hypothesized to be differentially related to quitting based upon goal orientation.

Changes in RFQ were expected to interact with motivational goal orientations to explain changes in smoking rate. However, results did not confirm a significant interaction between goal orientation and RFQ. Complexity of the analysis required to test such a relationship coupled with the small size of the sample may preclude definitive interpretations of this analysis. Situational factors such as intrinsic and extrinsic rewards theoretically appear to be appropriate starting points in the development of tobacco treatment programs that would systematically interact with personality traits identified by goal orientation theory. Several studies (Curry et al., 1990, 1991) have shown a relationship between intrinsic and extrinsic RFQ and smoking abstinence. However, it should be noted that the present study did not replicate that effect. While results from the current study were not definitive or conclusive in support of using motivational goal orientations as dimensions to differentiate smokers that would systematically interact with intrinsic and extrinsic rewards, results did provide support for the use of motivational goal orientations in future studies of the smoking cessation process. Identification of a new psychosocial variable that is associated with the smoking cessation process is exciting because of the lack of psychological variables observed to

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

be related to smoking abstinence (Niaura & Abrams, 2002; Shiffman, 1993). Moreover, results may provide insight into realizing the potential of patient-treatment matching programs.

4.3 Applied Implications (Design of Smoking Cessation Programs)

There is evidence to suggest that matching pharmacotherapy treatment, Nicotine Replacement Therapies (NRT), to degree of nicotine dependence improves efficacy (Herra, Franco, Partidas, Rolando, & Fagerstrom, 1995; Shiffman, 1993). However, Shiffman pointed out that matching treatment to degree of nicotine dependence does not represent patient-treatment matching because while NRT does work better for a certain subpopulation (extreme nicotine dependence), NRT also significantly improves abstinence rates for other subpopulations (low nicotine dependence). In this case, there is no reason to match because both subpopulations benefit from NRT. Patient-treatment matching will only be realized when separate treatments maximize health outcomes for theoretically specified subpopulations. According to Shiffman, "just showing that a treatment works significantly better for one subpopulation does not merit this goal unless there is also a different optimal treatment for other subpopulations" (p. 721).

Evidence also suggests that matching treatment to level of motivation to quit improves efficacy (Prochaska, 2004; Velicer & Prochaska, 1999). Specifically, stage matching treatment programs that deliver treatment components tailored to the patient's readiness of change or stage of change (e.g., precontemplation, contemplation, preparation, action, maintenance) have met with success (Velicer et al., 1995; Velicer & Prochaska, 1999). However, tailoring treatment to a stage is not the same as tailoring treatment to a patient. According to the transtheoretical model (Prochaska &

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

DiClemente, 1983), every smoker attempting to quit recycles through all five stages in the stages of change. People differentiated by dimensions identified by goal orientation theory should be expected to respond to different treatment protocols within different stages of change. For example, someone with a stronger PGO would receive different treatment components than someone with a weak PGO whether they were in the action or maintenance stage of change.

Results identify a target group which is at high risk for long-term failure at quitting when presented with negative feedback. Results also identify a group which may be better prepared for the process of quitting. The theoretical background for the current study provides a guide for intervention aimed at this group. In particular, individuals with a PGO should be encouraged to take their time a reducing smoking rate rather than quickly attempting to quit. Success at small smoking reductions such as only smoking 10 cigarettes per day as opposed to 15 cigarettes per day would demonstrate personal competence and bolster subsequent confidence among this at risk group. Moreover, individuals with a PGO may require intensive counseling during an initial quit attempt. As the study suggests, individuals with a PGO have maladaptive responses to failures. Interestingly, individuals with a PGO may be at increased risk for an abstinence violation effect where initial failure results in decreased positive affect, self-efficacy, and deleterious attributions concerning the causes of failure.

Health educators and counselors may use the Performance Goal Orientation dimension to identify individuals who would most benefit from relapse prevention treatment strategies. In contrast, a stronger LGO was associated with significantly lower rate of baseline smoking and more confidence and commitment to the goal of quitting.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Future research should explore susceptibility of a stronger PGO for characteristics of the abstinence violation effect as well as the protective processes of individuals with stronger LGO. Clinicians may help smokers with a PGO, who appear to be highly susceptible to negative feedback, to treat lapses and other failures as learning experiences. As a result, the PGO appears to be an important tool for identifying those who would most benefit from relapse prevention treatment strategies. Results also suggest that self-efficacy and goal commitment provide opportunities for interventions. Interventions aimed at increasing both of these constructs provide mechanisms to later success at quitting.

Smokers with a stronger Learning Goal Orientation may respond well to establishing small goals. Theoretically, the LGO is expected to be related to setting difficult goals. Difficult goals within the context of smoking cessation may result in negative long-term outcomes such as abandonment of the goal of quitting. Counselors who work with smokers with a stronger LGO to set achievable goals early on such as smoking reductions and short periods of quitting may build upon the strengths of the LGO. Achievement of such goals early may result in increased self-efficacy and long-term quitting success.

Results provide several implications for future research. Future studies investigating smoking cessation could explore different program components that optimize success for individuals with PGO or a LGO. Identification of individual difference variables that impact success at smoking cessation is the first step in realizing the ability to match patients to treatment programs. The ability to effectively match patients to smoking cessation treatment programs has continuously been suggested as a major contribution to the field (Niaura & Abrams, 2002; Shiffman, 1993). Health

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

professionals have lamented the relatively poor quit rates of formal smoking cessation programs. Results from the current study provide an opportunity to improve the overall success rate of smoking cessation programs. Finally, results from the current study have generalized the utility of using a motivational framework including goal orientation theory to studies of health-related behaviors. Smoking and obesity represent two major preventable causes of morbidity and mortality in the U.S. (Office of Public Health and Science, 1998). Future research should attempt to use constructs from goal orientation in research on other health-related behaviors such as weight loss programs or studies of heart attack rehabilitation.

Replicating and extending the observation that motivational goal orientation is related to the types of attributions people make would provide additional insight into the internal cognitive processes of smokers attempting to quit. Reattribution training programs could target maladaptive attribution patterns. Furthermore, such results could be used to identify groups that would benefit from relapse prevention as well as reattribution training. Traits identified by goal orientation theory may represent dimensions which can reliably differentiate people into groups that require separate treatment components. Demonstrating a relationship between theoretically driven traits and long-term quitting represent only part of what Shiffman (1993) suggested was necessary to realize patient-treatment matching.

Finally, future research should investigate differences between a Learning Goal Orientation and a Performance Goal Orientation in response to positive feedback within the context of health-related behavior such as smoking. Past research in academic settings has suggested that individuals with a stronger PGO tend to minimize past success

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

by suggesting that other individuals like them out performed them on similar test questions. Moreover, students with a PGO had significantly lower expectations for future performance compared to students with a LGO (Diener & Dweck, 1980). Future studies could explore for relationships between expectations for future success and Motivational Goal Orientations following successful feedback such as early quitting.

4.4 Strengths and Limitations

Every study has sources of strengths and limitations. Strengths of the current study include the longitudinal design with repeated measurement at important points in the smoking cessation process. Use of validated scales to assess motivational goal orientations, intrinsic and extrinsic rewards, and several process variables reduces ambiguity in interpretation of results. Testing of process variables provides additional explanatory information beyond simply identifying relationships between variables. Testing of process variables that are hypothesized to be responsible for observed relationships between predictor and criterion variables provides clear opportunities to intervene on such mechanisms.

The small sample size serves as a limitation to the current study. Several analyses required further reducing the sample. For example, analyses on research participants who did not quit at a certain measurement point and completed a later survey sometimes resulted in sparse data. Low power increases chances of committing type II errors. As a result, nonsignificant findings of certain study hypotheses may be due to reduced power as opposed to results that truly disconfirm study hypotheses. Future research should make efforts to obtain larger samples that would facilitate analyses of relationships

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

between motivational goal orientations and outcome variables among research participants that experience failure at different time points.

Low reliability values for some of the measures used in the study provide additional sources of limitations for the study. For example, the low reliabilities for the attribution scales may have reduced the ability to detect relationships with Motivational Goal Orientation scales. Moreover, low reliability of the attribution scales may have reduced the effect size of relationships that were detected. Finally, the low reliability of some of the measures used may have reduced the effect size of the relationships that were detected between study variables.

Additional limitations may include a highly educated sample which could result in restriction of range of variables such as the Learning Goal Orientation scale. However, there was no statistical difference in important study variables between research participants recruited from the public health agency and the college campus. In addition, attrition rates of participants responding to study surveys may have been related to study variables such as Motivational Goal Orientations or smoking rates. However, analyses suggested no significant differences in baseline smoking rates and Motivational Goal Orientations between participants who responded and participants who did not respond to follow-up surveys. Finally, the current study relied upon self-report data for smoking behavior outcome variables. However, the use of self-report data is common within the smoking cessation literature (Shipley et al., 1982). Despite these potential limitations, results of the present study are intriguing due to the strong theoretical grounding of study hypotheses and clear opportunities for points of intervention. Recent advancements in the smoking cessation literature have come from the introduction and improvement in

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

delivery of pharmacotherapies such as nicotine replacement therapies. Results from the present study identify fertile areas for future research in the development of new behavioral interventions for smoking cessation programs.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

References

Ackerman, P.L., & Heggestad, E.D. (1997). Intelligence, personality, and interests: Evidence for overlapping traits. *Psychological Bulletin, 121*, 219-245.

Austin, J. T., & Vancouver, J. B. (1996). Goal constructs in psychology: Structure, process, and content. *Psychological Bulletin, 120*, 338–375.

Bandura, A. (1986). *Social foundations of thought and action*. Englewood Cliffs, NJ: Prentice-Hall.

Bandura, A. (1991). Social cognitive theory of self-regulation. *Organizational Behavior and Human Decision Processes, 50*, 248-287.

Baer, J.S., Kamarck, T., Lichtenstein, E., & Ransom, C.C. (1989). Prediction of smoking relapse: Analysis of temptation and transgressions after initial cessation. *Journal of Consulting and Clinical Psychology, 57*, 623 – 627.

Barrick, M.R., Mount, M.K., & Strauss, J.P. (1993). Conscientiousness and performance of sales representatives: Test of the mediating effects of goal setting. *Journal of Applied Psychology, 78*, 715-722.

Baron, R.M., & Kenny, D.A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology, 51*(6), 1173-1182.

Button, S.B., Mathieu, J.E., & Zajac, D.M. (1996). Goal orientation in organizational research: A conceptual and empirical foundation. *Organizational Behavior and Human Decision Processes, 67*(1), 26-48.

Cameron, J., & Pierce, W.D. (1994). Reinforcement, reward, and intrinsic motivation: A meta-analysis. *Review of Educational Research, 64*, 363-423.

Carton, S., Jouvent, R., & Widlocher, D. (1994). Sensation seeking, nicotine dependence, and smoking motivation in female and male smokers. Addictive Behaviors, 19, 219-227.

Carver, C. S., & Scheier, M. F. (1981). *Attention and self-regulation: A control theory approach to human behavior*. New York: Springer.

Centers for Disease Control and Prevention. (1993a). Smoking-attributable mortality and years of potential life lost — United States, 1990. *Morbidity and Mortality Weekly Report, 42*, 645-648.

Centers for Disease Control and Prevention. (1993b). Mortality trends for selected smoking-related and breast cancer — United States, 1950-1990. *Morbidity and Mortality Weekly Report, 42*, 857, 863-866.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Chen, G., Gully, S.M., Whiteman, J.A., & Kilcullen, R.N. (2000). Examination of relationships among trait-like individual differences, state-like individual differences, and learning performance. *Journal of Applied Psychology, 85*, 835-847.

Cinciripini, P.M., Cinciripini, C.G., Wallfisch, A., Hague, W., & Vunakis, H.V. (1996). Behavior therapy and the transdermal nicotine patch: effects on cessation outcome, affect, and coping. *Journal of Consulting and Clinical Psychology, 64*, 314-323.

Curry, S.J., Grothaus, L.C., & McBride, C. (1997). Reasons for quitting: Intrinsic and extrinsic motivation for smoking cessation in a population-based sample of smokers. *Addictive Behaivors, 22*, 727-739.

Curry, S.J., McBride, C., Grothaus, L.C., Lando, H., Pirie, P. (2001). Motivation for smoking cessation among pregnant women. *Psychology of Addictive Behaviors, 15*, 126-132.

Curry, S., Wagner, E.H., & Grothaus, L.C. (1990). Intrinsic and extrinsic motivation for smoking cessation. *Journal of Consulting and Clinical Psychology, 58*, 310-316.

Curry, S.J., Wagner, E.H., & Grothaus, L.C. (1991). Evaluation of intrinsic and extrinsic motivation interventions with a self-help smoking cessation program. *Journal of Consulting and Clinical Psychology, 59*, 318-324.

Deci, E.L. (1972). The effects of contingent and noncontingent rewards and controls on intrinsic motivation. *Organizational Behavior and Human Performance, 8,* 217-229.

Deci, E.L. (1975). *Intrinsic Motivation*. New York: Plenum.

Diener, C.I., & Dweck, C.S. (1978). An analysis of learned helplessness: Continuous changes in performance, strategy, and achievement cognitions following failure. *Journal of Personality and Social Psychology, 36*, 451-462.

Diener, C.I., & Dweck, C.S. (1980). An analysis of learned helplessness: II. The processing of success. *Journal of Personality and Social Psychology, 39*, 940-952.

Dweck, C. S., Chiu, C., and Hong, Y. (1995). Implicit theories and their role in judgments and reactions: A world from two perspectives. *Psychological Inquiry, 6*, 267-285.

Dweck, C.S., & Leggett, E.L. (1988). A social-cognitive approach to motivation and personality. *Psychological Review, 95*, 256-273.

Eiser, J.R., van der Plight, J., Raw, M., & Sutton, S.R. (1985). Trying to stop smoking: Effects of perceived addiction, attributions for failure, and expectancy of success. *Journal of Behavioral Medicine, 8*, 321-341.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Eisnerberger, R., & Cameron, J. (1996). Detrimental effects of reward: Reality of myth? *American Psychologist, 51*, 1153-1166.

Elliot, A.J., & Church, M.A. (1997). A hierarchical model of approach and avoidance achievement motivation. *Journal of Personality and Social Psychology, 72* (1), 218 – 232.

Elliot, A.J., & Sheldon, K.M. (1997). Avoidance achievement motivation: A personal goals analysis. *Journal of Personality and Social Psychology, 73*, 171-185.

Garcia-Vera, M.P. (2004). Clinical utility of the combination of cognitive-behavioral techniques with nicotine patches as a smoking-cessation treatment: Five-year results of the "Ex-Moker" program. *Journal of Substance Abuse Treatment, 27*, 325-333.

Glasgow, R.E., & Lichtenstein, E. (1987). Long-term effects of behavioral smoking cessation interventions. *Behavior Therapy, 18*, 297-324.

Glassman, A.H., Covey, L.S., Dalack, G.W., Stetner, F., Rivelli, S.K., Fleiss, J., & Cooper, T.B. (1993). Smoking cessation, clonidine, and vulnerability to nicotine among dependent smokers. *Clinical Pharmacology & Therapeutics, 54*, 670-679.

Gulliver, S.B., Hughes, J.R., Solomon, I.J., & Dey, A. (1995). An investigation of self-efficacy, partner support and daily stresses as predictors of relapse to smoking in self-quitters. *Addiction, 90*, 767-772.

Halpern, M.T., & Warner, K.E. (1993). Motivations for smoking cessation: A comparison of successful quitters and failures. *Journal of Substance Abuse, 5,* 247-256.

Hatsukami, D.K., & Lando, H. (1999). Smoking cessation. In. P.J. Oh, R.E. Tarter, & R.T. Ammerman (Eds.). *Sourcebook on substance abuse*. Allyn & Bacon: Boston.

Helmreich, R.L., Sawin, L.L., & Carsrud, A.L. (1986). The honeymoon effect in job performance: Temporal increases in the predictive power of achievement motivation. *Journal of Applied Psychology, 71*, 185-188.

Herrera, N., Franco, R..L.H., Partidas, A., Rolando, R., & Fagerstrom, K.O. (1995). Nicotine gum, 2 and 4 mg., for nicotine dependence. A double-blind placebo-controlled trial within a behavior modification support program. *Chest, 108,* 447–451.

Holmbeck, G.N. (2002). Post-hoc probing of significant moderational and mediational effects in studies of pediatric populations. *Journal of Pediatric Psychology, 27* (1), 87-96.

Hospers, H.J., Kok, G., & Strecher, V.J. (1990). Attributions for previous failures and subsequent outcomes in a weight reduction program. *Health Education Quarterly,* 409-415.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Kanfer, R. (1995). Motivation and performance. In N. Nicholson (Ed.), *The Blackwell dictionary of organizational behavior.* Oxford: Blackwell Publishers.

Kanfer, R., & Ackerman, P.L. (1989). Motivation and cognitive abilities: An integrative/aptitude-treatment interaction approach to skill acquisition. *Journal of Applied Psychology, 74*, 657-690.

Kozlowski, S.W.J., Gully, S.M., Brown, K.G., Salas, E., Smith, E.M., & Nason, E.R. (2001). Effects of training goals and goal orientation traits on multidimensional training outcomes and performance adaptability. *Organizational Behavior & Human Decision Processes, 85*, 1-31.

Lando, H.A. (1989). Treatment outcome evaluation methodology in smoking cessation: Strengths and key issues. *Advances in Behaviour Research and Therapy, 11*, 201-214.

Lando, H.A. (1993). Formal quit smoking treatments. In C.T. Orleans, & J. Slade (Eds). *Nicotine Addiction: Principals and Management*. New York: Oxford University Press.

Lawrence, & Rubinson (1986). Self-efficacy as a predictor of smoking behavior in young adolescents. *Addictive Behaviors, 11*, 367-382.

Lichtenstein, E., & Glasgow, R.E. (1992). Smoking cessation: What have we learned over the past decade? *Journal of Consulting and Clinical Psychology, 60*, 518-527.

Locke, E.A., Shaw, K.N., Saari, L.M., & Latham, G.P. (1981). Goal setting and task performance: 1969-1980. *Psychological Bulletin, 90*, 125-152.

Marlatt, G.A. & Gordon, J.R. (1985). *Relapse prevention.* New York: Guilford Press.

Matheny, K.B, & Weatherman, K.E. (1998). Predictors of smoking cessation and maintenance. *Journal of Clinical Psychology, 54*, 223-235.

Niaura, R., & Abrams, D.B. (2002). Smoking cessation: Progress, priorities, and prospectus, *Journal of Consulting and Clinical Psychology, 70*, 494-509.

Ockene, J.K., Mermelstein, R.J., Bonollo, D.S., Emmons, K.M., Perkins, K.A., Voorhees, C.C., Hollis, J.F. (2000). Relapse and maintenance issues for smoking cessation. *Health Psychology, 19,* 17-31

Office of Public Health and Science. (1998). *Healthy people 2010 objectives: Draft for public comment.* Washington, DC: U.S. Printing Office

Perchacek, T.F., & Danaher, B.G. (1979). How and why people quit smoking: A cognitive-behavioral analysis. In P.C. Kendall & S.D. Hollon (Eds.), *Cognitive behavioral interventions:Theory,research,and procedures* (pp. 389–423). New York: Academic Press.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Prochaska, J.O., & DiClemente, C.C. (1983). Stages and processes of self-change of smoking: Toward an integrative model of change. *Journal of Consulting and Clinical Psychology, 51*, 390-395.

Prochaska, J.O. (2004). Population Treatment for Addictions. *Current Directions in Psychological Science. Vol 13,* 242-246

Radosevich, D.J., Vaidyanathan, V.T., Yeo, S., & Radosevich, D.M. (2004). Relating goal orientation to self-regulatory processes: A longitudinal field test. *Contemporary Educational Psychology, 29*, 207-229.

Rummel, A., & Feinberg, R. (1990). Re-evaluation or reinforcement? A new look at Cognitive Evaluation Theory. *Social Behavior & Personality, 18*, 65-79.

Ryan, R.M. & Deci, E.L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist, 55*, 68-78.

Seligman, M., Abramson, L., Semmel., A. & von Baeyer, C. (1979). Depressive attribution style, *Journal of Abnormal Psychology, 88*, 242-247.

Shiffman, S. (1993). Smoking cessation treatment – any progress. *Journal of Consulting and Clinical Psychology, 61*, 718-722.

Shiffman, S., Balabanis, M.H., Paty, J.A., Engberg, J., Gwaltney, C.J., Liu, K.S., Gnys, M., Hickcox, M., Paton, S.M. (2000). Dynamic effects of self-efficacy on smoking lapse and relapse. *Health Psychology, 19*, 315 – 323.

Shiffman, S., Hickcox, M., Paty, J.A., Gnys, M., Kassel, J.D., & Richards, T. (1997). The Abstinence Violation Effect following smoking lapses and temptations, *Cognitive Therapy and Research, 21*, 497-523.

Shiffman, S., Hickcox, M., Paty, J.A., Gnys, M., Kassel, J.D., & Richards, T.J. (1996). Progression from a smoking lapse to relapse: Prediction from abstinence violation effects, nicotine dependence, and lapse characteristics. *Journal of Consulting and Clinical Psychology, 64*, 993 – 1002.

Shipley, R.H., Rosen, T.J., & Williams, C. (1982). Measurement of smoking surveys and some recommendations. *Addictive Behavior, 7*, 299-302.

Smith, S., & Fiore, M. (1999). The epidemiology of tobacco use, dependence, and cessation in the United States. *Primary Care: Clinics in Office Practice, 26*, 433-461.

Snow, R. (1989). Aptitude-Treatment Interaction as a framework for research on individual differences in learning. In P. Ackerman, R.J. Sternberg, & R. Glaser (ed.), Learning and Individual Differences. New York: W.H. Freeman.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Spanier, C.A., Shiffman, S., Maurer, A., Reynolds, W., & Quick, D. (1996). Rebound following failure to quit smoking: The effects of attributions and self-efficacy. *Experimental and Clinical Psychopharmacology, 4*, 191-197.

Tabachnick, B., & Fidell, L. (2001) Using Multivariate Statistics. Allyn & Bacon.

Task Force 1. (1986). Classification and Assessment of smoking behavior. *Health Psychology, 5*, 3-11.

The Tobacco Use and Dependence Clinical Practice Guideline Panel. (2000). A clinical practice guideline for treating tobacco use and dependence. A U.S. Public Health Service Report. *Journal of the American Medical Association, 283*, 3244-3254.

U.S. Department of Health and Human Services. (1988). *The health consequences of smoking: Nicotine addiction, a report of the surgeon general.* Washington, DC: U.S. Government Printing Office.

U.S. Department of Health and Human Services. (1964) Smoking and Health: Report of the Advisory Committee to the Surgeon General of the Public Health Service. Washington, DC: U.S. Government Printing Office.

U.S. Department of Health and Human Services. (1989) Reducing the Health Consequences of Smoking–25 Years of Progress: A Report of the Surgeon General. Washington, DC: U.S. Government Printing Office.

VandeWalle, D., Brown, S.P., Cron, W.L., & Slocum, J.W. (2001). The influence of goal orientation and self-regulation tactics on sales performance: A longitudinal field test. *Journal of Applied Psychology, 84*, 249-259.

Vallerand, R.J. & Reid, G. (1984). On the causal effects of perceived competence on intrinsic motivation: A test of cognitive evaluation theory. *Journal of Sport Psychology, 6*, 94-102.

Velicer, W.F., Fava, J.L., Prochaska, J.O., Abrams, D.B., Emmons, K.M., & Pierce, J.P. (1995). Distribution of smokers by stage in three representative samples. *Preventive Medicine, 24,* 401–411.

Velicer, W.F., & Prochaska, J.O. (1999). An expert system intervention for smoking cessation. *Patient Education and Counseling, 36,* 119–129.

Weiner, B. (1990). History of motivational research in education. *Journal of Educational Psychology, 82*, 616-622.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Figures and Tables

Item	Page
Table 1. Scale Reliabilities	69
Table 2. Structure matrix from principal components analysis of the Motivational Goal Orientation Scale	70
Table 3. RFQ Scale Items	71
Table 4. Structure matrix from principal components analysis of Self-efficacy items	72
Table 5. Descriptive Statistics for Study Variables at Enrollment	73
Table 6. Interrelations of Study Variables at Enrollment	74
Table 7. Cross-sectional Relationships Between Predictors and Baseline Smoking Rate.	75
Table 8. Smoking rate at the one-month follow-up regressed on Motivational Goal Orientations and recruitment site	76
Table 9. Quit rates at the one-month follow-up regressed on Motivational Goal Orientations and recruitment site	77
Table 10. Smoking rate at the six-month follow-up regressed on Motivational Goal Orientations and recruitment site	78
Table 11. Quit rates at the six-month follow-up regressed on Motivational Goal Orientations and recruitment site	79
Table 12. Controllability attributions at one- and six-month follow-up regressed on Motivational Goal Orientations	80
Table 13. Goal commitment at the six-month follow-up regressed on Motivational Goal Orientations and recruitment site among participants experiencing early quitting failure	81
Table 14. Mood self-efficacy at the six-month follow-up regressed on Motivational Goal Orientations and recruitment site among participants experiencing early quitting failure	82
Table 15. Quit rates at the six-month follow-up regressed on Motivational Goal Orientations and recruitment site among participants experiencing early quitting failure	83
Table 16. Mood self-efficacy mediating the relationship between Performance Goal Orientation and quitting at the six-month follow-up	84
Figure 1. Motivational Model Flow Chart	85
Figure 2. Smoking Rate at Study Enrollment, One-, and Six-months Follow-up	86
Figure 3. Mean Number of Cigarettes Consumed at Each Survey Point as a Function of Performance Goal Orientation	87
Figure 4. Change in Intrinsic and Extrinsic Reasons for Quitting	88

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Table 1. Scale Reliabilities

Scale	T1 (n = 114)	T2 (n = 70)	T3 (n = 57)	T4 (n = 66)
Learning Goal Orientation (10-items)	.85	--	--	--
Performance Goal Orientation (10-items)	.82	--	--	--
Intrinsic RFQ (10-items total)	.77	.79 (n = 69)	.78 (n = 56)	.84
Health Concerns (5-items)	.76	.76 (n = 69)	.79 (n = 56)	.83
Self-Control (5-items)	.68	.76 (n = 69)	.80 (n = 56)	.84
Extrinsic RFQ (10-items total)	.68	.72 (n = 69)	.77 (n = 56)	.69
Immediate Reinforcement (5-items)	.62	.61 (n = 69)	.70 (n = 56)	.64
Social Pressure (5-items)	.68	.68 (n = 69)	.70 (n = 56)	.67
Self-Efficacy Mood (7-items)	.87	.94	.98	.97
Self-Efficacy Situation (4-items)	.76	.84	.80	.90
Goal Commitment (3-items)	.89	.88	.95	.95
Expectancy (3-items)	.83	.79	.81	.77
Attributions for *ability* to quit				
Locus of Causality (2-items)	--	.72 (n = 28)	.66 (n = 23)	.88 (n = 22)
Locus of Control (2-items)	--	.55 (n = 28)	.73 (n = 23)	.70 (n = 22)
Locus of Stability (2-items)	--	.56 (n = 28)	.78 (n = 23)	.68 (n = 22)
Attributions for *inability* to quit				
Locus of Causality (2-items)	--	.50 (n = 40)	.75 (n = 33)	.78 (n = 43)
Locus of Control (2-items)	--	.50 (n = 40)	.69 (n = 33)	.71 (n = 43)
Locus of Stability (2-items)	--	.54 (n = 40)	.66 (n = 33)	.50 (n = 43)

Note: Number of items for each scale appears next to the scale label. Sample size for reliability analyses appears at the top of each column. Sample size of reliability analyses is listed next to the alpha value if different than that listed at the top of the column.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Table 2. Structure matrix from principal components analysis of the Motivational Goal Orientation Scale

Survey Item How true are the following statements of you:	LGO Component	PGO Component
1.) I prefer to do things that I can do well rather than things that I do poorly.	--	.66
2.) On most jobs, people can pretty much accomplish whatever they set out to accomplish.	.48	--
3.) The things I enjoy the most are the things I do the best.	--	.49
4.) When I have difficulty solving a problem, I enjoy trying different approaches to see which one will work.	.10	--
5.) I feel smart when I do something without making any mistakes.	--	.49
6.) I try hard to improve on my past performance.	.73	--
7.) I like to work on tasks that I have done well on in the past.	--	.57
8.) I feel smart when I can do something better than most other people	--	.62
9.) Even if I know that I did a good job on something, I'm satisfied only if others recognize my accomplishments.	--	.67
10.) It's important to impress others by doing a good job.	--	.65
11.) The opportunity to do challenging work is important to me.	.80	--
12.) When I fail to complete a difficult task, I plan to try harder the next time I work on it.	.59	--
13.) I prefer to work on tasks that force me to learn new things.	.77	--
14.) The opportunity to learn new things is important to me.	.77	--
15.) I do my best when I'm working on a fairly difficult task.	.72	--
16.) I like to be fairly confident that I can successfully perform a task before I attempt it.	--	.68
17.) The opportunity to extend the range of my abilities is important to me.	.66	--
18.) The opinions others have about how well I can do certain things are important to me.	--	.66
19.) I'm happiest at work when I perform tasks on which I know that I won't make any errors.	--	.70
20.) Your performance on most tasks or jobs increases with the amount of effort you put into them.	.50	--

Note: Coefficient values less than .30 are not reported. Item 4 delete from scale due to low loading upon the Learning Goal Orientation scale.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Table 3. RFQ Scale Items

Intrinsic Health Concerns	**I want to quit smoking:**
1.	Because I am concerned that I will suffer from a serious illness if I don't quit smoking.
2.	Because I have noticed physical symptoms that smoking is hurting my health.
3.	Because I can graphically picture the effects that smoking has on my body.
4.	Because I have known other people who have died from serious illnesses that were caused by smoking.
5.	Because I am concerned that smoking will shorten my life.
Intrinsic Self-Control	
1.	To show myself that I can quit smoking if I really want to.
2.	Because I will like myself better if I quit smoking.
3.	So that I can feel in control of my life.
4.	Because quitting smoking will prove that I can accomplish other things that are important to me.
5.	To prove to myself that I am not addicted to cigarettes
Extrinsic Immediate Reinforcement	
1.	So that my hair and clothes won't smell.
2.	So that I will save money on smoking related costs such as dry cleaning.
3.	Because I won't burn holes in clothing or furniture.
4.	Because I want to save money that I spend on cigarettes.
5.	So that I won't have to clean my house or car as often.
Extrinsic Social Pressure	
1.	Because my spouse, children, or other person I am close to will stop nagging me if I quit smoking.
2.	Because someone has given me an ultimatum (made a threat) to quit.
3.	Because I will receive a special gift if I quit.
4.	Because people I am close to will be upset with me if I don't quit.
5.	Because I will receive a financial reward for quitting (money from a friend or family member, bonus from work, etc)

Note: responses to scale items were recorded on a 6-point response scale ranging from

"very untrue of me" to "very true of me".

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Table 4. Structure matrix from principal components analysis of Self-efficacy items

Survey Items How sure are you that you could resist the urge to smoke:	Mood Self-efficacy Component	Situational Self-efficacy Component
when you feel frustrated.	.75	--
when you are worried.	.79	.32
when you feel upset.	.78	--
when you feel tense.	.82	--
when you feel nervous.	.79	--
when you feel angry.	.62	--
when you feel depressed.	.72	--
when someone offers you a cigarette.	--	.69
when you are drinking an alcoholic beverage	--	.71
when you are drinking coffee or tea.	--	.61
when you are with friends who smoke.	--	.79

Note: Coefficient values less than .30 are not reported

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Table 5. Descriptive Statistics for Study Variables at Enrollment

Variable	Mean	Standard Deviation
Performance Goal Orientation	4.25	.68
Learning Goal Orientation	4.72	.58
Intrinsic RFQ	4.14	.79
Extrinsic RFQ	3.02	.82
Self Efficacy (mood)	2.07	.66
Self Efficacy (situations)	2.29	.75
Goal Commitment	4.73	.92
Smoking rate T1 (n = 112)	16.29	10.31

N= 114 unless otherwise noted

Smoking Rate = average number of cigarettes in the past week

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Table 6. Interrelations of Study Variables at Enrollment

Variables	Smoking Rate T1	Smoking Rate T2	Smoking Rate T4	Quit rate T2	Quit Rate T4	PGO	LGO	Int – RFQ	Ext – RFQ	SE - Mood	SE – Sit	GC
1. smoking rate T1	--											
2. smoking rate T2	.35**	--										
3. smoking rate T4	.47**	.16	--									
4. quit rates T2	.09	-.41**	-.27*	--								
5. quit rates T4	-.36**	-.17	-.62**	.27*	--							
6. Performance	-.02	.00	.08	-.02	-.12	--						
7. Learning	-.18*	-.02	.03	.15	-.14	.11	--					
8. Intrinsic – RFQ	-.07	-.20	.03	.19	-.15	.06	.37**	--				
9. Extrinsic – RFQ	.04	-.07	-.06	.03	.02	.03	.16	.38**	--			
10. Self Efficacy – Mood	-.03	-.04	-.20	.23*	.21	-.26**	.08	-.14	.01	--		
11.Self Efficacy–Situations	.03	-.07	.04	.19	.10	-.02	.23*	-.01	.05	.25**	--	
12. Goal Commitment	.04	.00	-.02	.11	-.02	-.04	.38**	.29**	.14	.23**	.22**	--

N = 114(between T1 variables); n=70 (with T2 variables); n=66(with T4 variables); n=54(between T2 & T4 variables)

* .05, ** .01

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Table 7. Cross-sectional Relationships Between Predictors and Baseline Smoking Rate.

Predictors	Standardized Beta	Standard Error	t-test	Sig.
Recruitment Site	.06	3.11	.38	$p > .05$
Gender	.07	2.08	.68	$p > .05$
Years Smoking	.15	.13	1.05	$p > .05$
Performance Goal Orientation	-.03	1.53	-.29	$p > .05$
Learning Goal Orientation	-.22	1.97	-1.96	$p > .05$
Intrinsic RFQ	-.09	1.55	-.77	$p > .05$
Extrinsic RFQ	.08	1.30	.80	$p > .05$
Self Efficacy (Mood)	-.07	1.72	-.59	$p > .05$
Self Efficacy (Situations)	.03	1.40	.24	$p > .05$
Goal Commitment	.13	1.22	1.21	$p > .05$

DV: baseline smoking rate ($R^2 = .10$)

$F(10, 111) = 1.09, p > .05$

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Table 8. Smoking rate at the one-month follow-up regressed on Performance Goal Orientations and recruitment site

Variables	Standardized Beta	Standard Error	t-test	Sig.
Recruitment Site	-.26	2.31	-2.23	$p < .05$
Baseline Smoking	.40	.12	3.45	$p < .05$
Performance	.01	1.76	.05	$p > .05$

DV: T2 smoking rate (recruitment site: 1 = college campus, 2 = public health agency)

($R^2 = .19$) F (3, 67) = 4.89, $p < .05$

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Table 9. Quit rates at the one-month follow-up regressed on Performance Goal Orientations and recruitment site

Variables	Standardized Beta	Standard Error	Odds Ratio	Sig.	95% CI for Odds Ratio
Recruitment site	1.12	.53	3.08	$p < .05$	1.09 – 8.67
Baseline Smoking	.01	.03	1.01	$p < .05$	.96 – 1.07
Performance	-.15	.40	.86	$p > .05$	.39 – 1.88

DV: T2 quitting (recruitment site: 1 = college campus, 2 = public health agency)

$X^2(3, N = 68) = 5.36, p > .05$

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Table 10. Smoking rate at the six-month follow-up regressed on Learning Goal Orientations and recruitment site

Variables	Standardized Beta	Standard Error	t-test	Sig.
Recruitment Site	.23	2.51	2.11	$p < .05$
Baseline Smoking	.45	.12	4.05	$p < .05$
Learning	.10	2.47	.88	$p > .05$

DV: T4 smoking rate (recruitment site: 1=college campus, 2=public health agency)

($R^2 = .28$) $F(3, 65) = 8.08, p < .05$

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Table 11. Quit rates at the six-month follow-up regressed on Learning Goal Orientations and recruitment site

Variables	Standardized Beta	Standard Error	Odds Ratio	Sig.	95% CI for Odds Ratio
Recruitment site	-.26	.61	.77	$p > .05$	.23 – 2.54
Baseline Smoking	-.11	.04	.89	$p < .05$	.82 - .97
Learning	-83	.58	.44	$p > .05$	.14 – 1.38

DV: T4 quitting; (recruitment site: 1=college campus, 2=public health agency)

$X^2(3, N = 68) = 12.88, p < .05$

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Table 12. Controllability attributions at one- and six-month follow-up regressed on Motivational Goal Orientations

Variables	Standardized Beta	Standard Error	t-test	Sig.
Performance	.13 (.07)	.47 (.40)	.76 (.46)	$p > .05$ ($p > .05$)
Learning	-.35 (-.05)	.47 (.62)	-2.11 (-.33)	$p < .05$ ($p > .05$)

DV: T2 controllability attributions (control – uncontrollability) ($R^2 = .11$)

F (2, 39) = 2.24, $p > .05$

Results for six-month follow-up appear in parentheses

DV: T4 controllability attributions (control – uncontrollability) ($R^2 = .11$)

F (2, 42) = .15, $p > .05$

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Table 13. Goal commitment at the six-month follow-up regressed on Motivational Goal Orientations and recruitment site among participants experiencing early quitting failure

Variables	Standardized Beta	Standard Error	t-test	Sig.
Recruitment Site	-.22	.45	-1.36	$p > .05$
Performance	-.45	.39	-2.66	$p < .05$
Learning	.02	.42	.13	$p > .05$

DV: T4 goal commitment (recruitment site: 1=college campus, 2=public health agency)

($R^2 = .24$) $F\ (3, 33) = 3.21, p < .05$

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Table 14. Mood self-efficacy at the six-month follow-up regressed on Motivational Goal Orientations and recruitment site among participants experiencing early quitting failure

Variables	Standardized Beta	Standard Error	t-test	Sig.
Recruitment site	-.22	.34	-1.37	$p > .05$
Performance	-.48	.30	-2.92	$p < .05$
Learning	.01	.32	.004	$p > .05$

DV: T4 mood self-efficacy ($R^2 = .28$)

$F(3, 33) = 3.80, p < .05$

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Table 15. Quit rates at the six-month follow-up regressed on Motivational Goal Orientations and recruitment site among participants experiencing early quitting failure

Variables	Standardized Beta	Standard Error	Odds Ratio	Sig.	95% CI for Odds Ratio
Recruitment site	-3.19	1.96	.04	$p > .05$	.00 – 1.92
Performance	-2.39	1.08	.09	$p < .05$	.01 - .76
Learning	-1.28	1.09	.28	$p > .05$	.03 – 2.33

DV: T4 quitting

$X^2(3, N = 42) = 12.58, p < .05$

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Table 16. Mood self-efficacy mediating the relationship between Performance Goal Orientation and quitting at the six-month follow-up

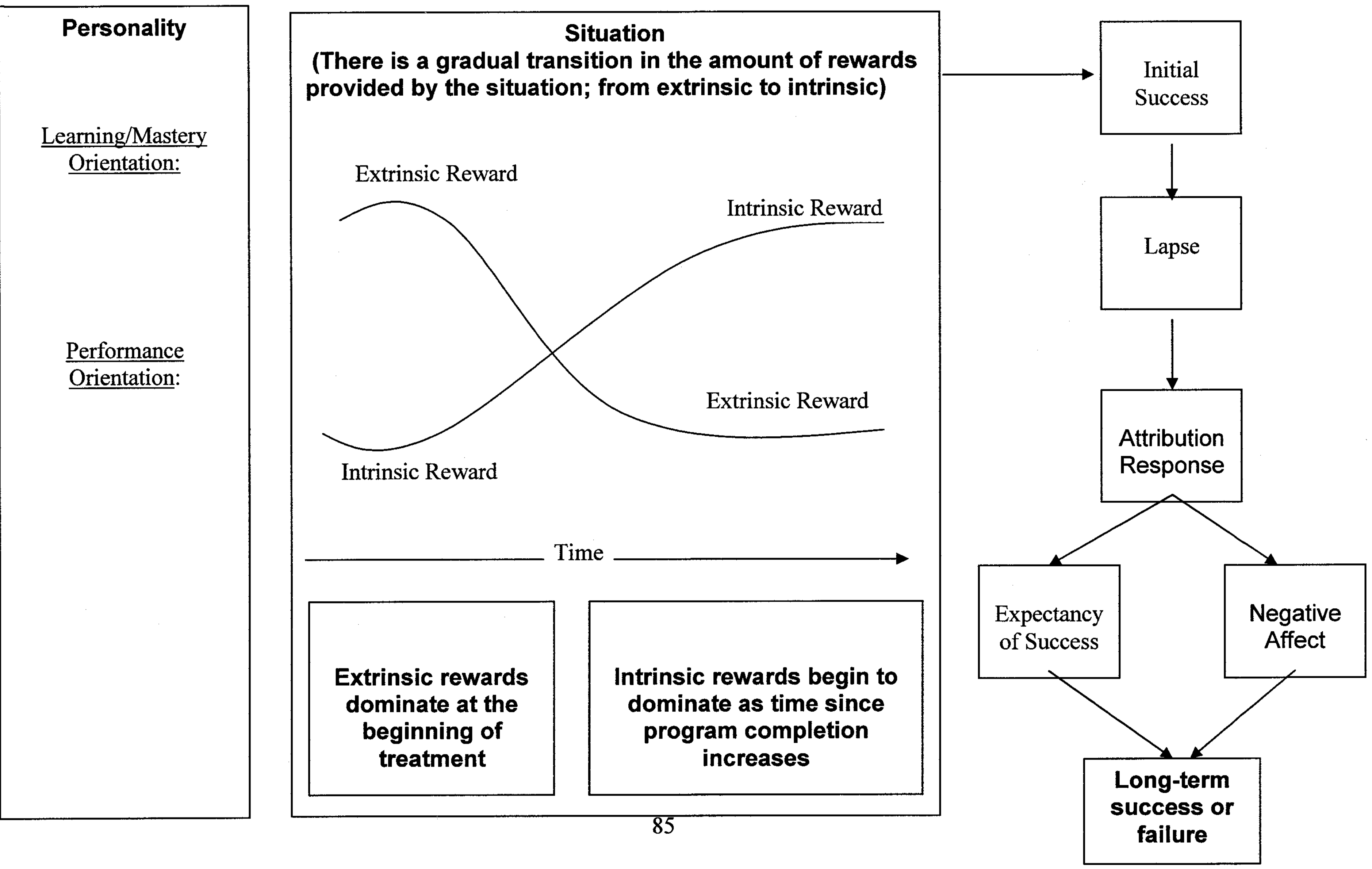
	Variables	Standard. Beta	Standard Error	Odds Ratio	Sig.	95% CI for Odds Ratio
Model 1:	Recruitment site	-3.19	1.96	.04	$p > .05$	.00 – 1.92
$X^2(3, N = 42) = 12.58, p < .05$	Performance	-2.39	1.08	.09	$p < .05$	.01 - .76
	Learning	-1.28	1.09	.28	$p > .05$	.03 – 2.33
Model 2:	Recruitment site	-3.55	2.47	.03	$p > .05$	.00 – 3.66
$X^2(1, N = 42) = 7.32, p < .05$	Performance	-.93	1.50	.39	$p > .05$	.02 – 7.43
	Learning	-1.56	1.28	.21	$p > .05$	.02 – 2.61
	Mood SE	2.00	1.02	7.41	$p < .05$	1.01 – 54.45

DV: T4 quitting ($R^2 = .44$)

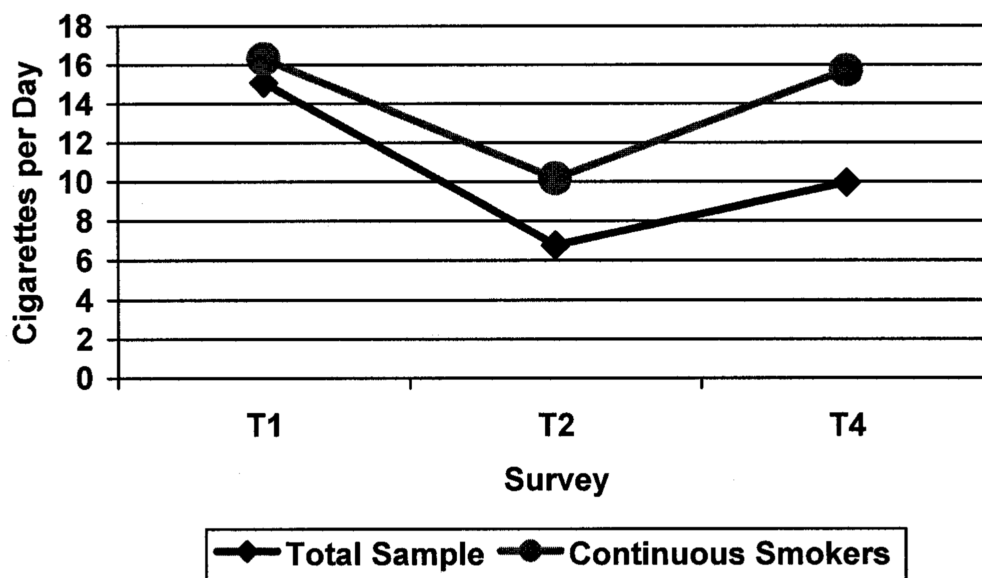
$X^2(4, N = 42) = 18.51, p < .05$

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Figure 1. Motivational Model Flow Chart



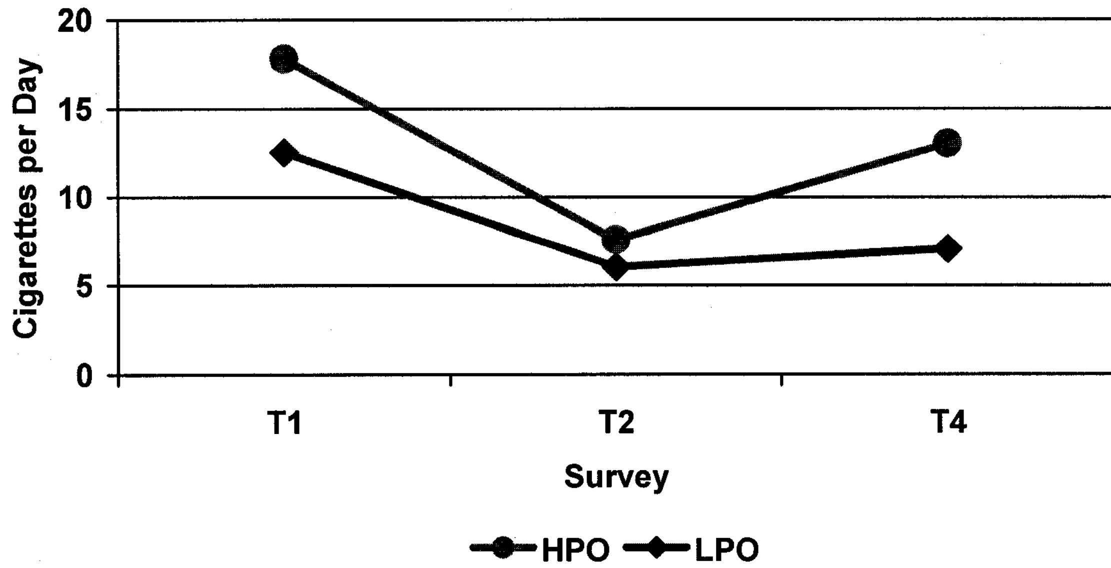
Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.



Total Sample: Significant difference in mean number of cigarettes consumed between T1 and T2, as well as between T1 and T4. Difference between T2 and T4 was not significant.

Figure 2. Smoking Rate at Study Enrollment, One-, and Six-months Follow-up

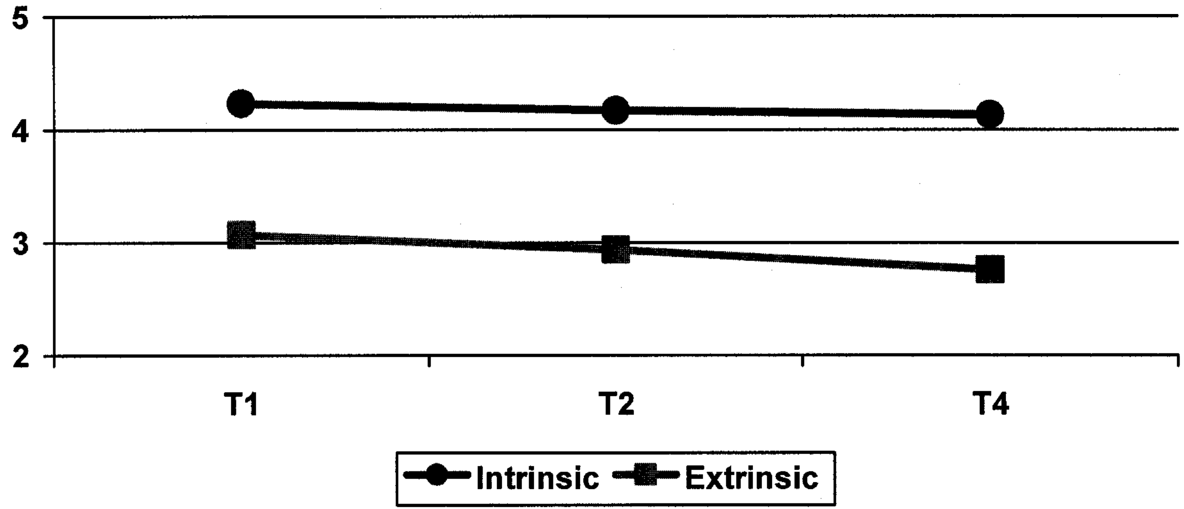
Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.



* GLM results suggested significant difference between individuals with a High Performance Orientation (HPO) and those with a Low Performance Orientation (LPO).

Figure 3. Mean Number of Cigarettes Consumed at Each Survey Point as a Function of Performance Goal Orientation

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.



*Significant change in Extrinsic RFQ between T1 and T4

Figure 4. Change in Intrinsic and Extrinsic Reasons for Quitting

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

APPENDIX: STUDY SURVEYS

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

ENROLLMENT SURVEY

INSTRUCTIONS:

This questionnaire asks you to respond to statements about your attitudes, opinions, and behaviors. Read each statement carefully, and decide whether or not the statement describes you. Using the scale at the top of each page provide the degree to which the **ENTIRE** statement is true of you. Give only one answer for each statement.

Some of the statements may refer to experiences you may not have had. Respond to these statements in terms of how true you think it **WOULD BE** of you.

Look at the sample statement below.

SAMPLE STATEMENT:

1 ♦	2 ♦	3 ♦	4 ♦	5 ♦	6 ♦
Very **UNTRUE** of Me	**UNTRUE** of Me	Somewhat **UNTRUE** of Me	Somewhat **TRUE** of Me	**TRUE** of Me	Very **TRUE** of Me

I like to go to parties.

MARK
1 ➔ *if you really dislike parties and you try to avoid them.*
2 ➔ *if you generally dislike parties and only go when you have to.*
3 ➔ *if you think parties are okay but generally prefer not to go.*
4 ➔ *if you think parties are okay and generally prefer to go.*
5 ➔ *if you generally like parties and go to most of the time.*
6 ➔ *if you really like parties and only miss one if you absolutely have to.*

PLEASE NOTE:

- There are no right or wrong answers. Simply describe yourself honestly and state your opinions accurately.
- In deciding on your answer, consider your life in general and not only the last few weeks or months.
- Deciding on an answer may be difficult for some of the statements. If you have a hard time deciding, choose the answer that is **MOST** true of you.

Some items may seem to be asking you the same question. These are not meant to be trick questions. Do not look back at your previous answers, simply answer each question honestly.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Are you filling out this survey before your first smoking cessation meeting/appointment with a counselor (or health educator)?

A. Yes
B. No

For the next series of questions please use the following directions. What are your reasons for wanting to quit smoking **at this time?** Below is a list of reasons that smokers may have for quitting. Read each reason and decide how true it is of you **right now**. Remember, there are no "right" or "wrong" reasons for wanting to quit smoking. Any reason is a good one!

1 ♦	2 ♦	3 ♦	4 ♦	5 ♦	6 ♦
Very **UNTRUE** Of Me	**UNTRUE** of Me	Somewhat **UNTRUE** of Me	Somewhat **TRUE** of Me	**TRUE** of Me	Very **TRUE** of Me

I WANT TO QUIT SMOKING:

1. ____ Because I am concerned that I will suffer from a serious illness if I don't quit smoking.
2. ____ To show myself that I can quit smoking if I really want to.
3. ____ So that my hair and clothes won't smell.
4. ____ Because my spouse, children, or other person I am close to will stop nagging me if I quit smoking.
5. ____ Because I have noticed physical symptoms that smoking is hurting my health.
6. ____ Because I will like myself better if I quit smoking.
7. ____ So that I will save money on smoking related costs such as dry cleaning.
8. ____ Because someone has given me an ultimatum (made a threat) to quit.
9. ____ Because I can graphically picture the effects that smoking has on my body.
10. ____ So that I can feel in control of my life.
11. ____ Because I won't burn holes in clothing or furniture.
12. ____ Because I will receive a special gift if I quit.
13. ____ Because I have known other people who have died from serious illnesses that were caused by smoking.
14. ____ Because quitting smoking will prove that I can accomplish other things that are important to me.
15. ____ Because I want to save money that I spend on cigarettes.
16. ____ Because people I am close to will be upset with me if I don't quit.
17. ____ Because I am concerned that smoking will shorten my life.
18. ____ To prove to myself that I am not addicted to cigarettes.
19. ____ So that I won't have to clean my house or car as often.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

20. ____ Because I will receive a financial reward for quitting (money from a friend or family member, bonus from work, etc.).

The next two questions ask you about your experiences so far with quitting.

21. ____ Over the past week, how many people, including your counselor or health educator, family, friends, or co-workers, have you talked with about trying to quit smoking? (You may enter that number in the provided blank. If you are not sure about the exact number of people, please provide your best estimate of the number of people).

22. ____ Over the past week, how many special favors, such as favorite meals and gifts, have you received for trying to quit smoking?

1 ♦	2 ♦	3 ♦	4 ♦	5 ♦	6 ♦
Very **UNTRUE** Of Me	**UNTRUE** of Me	Somewhat **UNTRUE** of Me	Somewhat **TRUE** of Me	**TRUE** of Me	Very **TRUE** of Me

23. ____ When I become interested in something, I try to learn as much about it as I can.

24. ____ I set goals as a way to improve my performance.

25. ____ It really upsets me when someone does something better than I do.

26. ____ I perform best when I compete with others.

27. ____ When I am learning something new, I try to understand it completely.

28. ____ If I already do something well, I don't see the need to challenge myself to do better.

29. ____ I tend to put extra effort into tasks that involve competition with others.

30. ____ I am not a competitive person.

31. ____ Even when I have studied hard enough to get a good grade, I study more because I want to completely understand the material.

32. ____ When learning something new, I focus on improving my performance.

33. ____ It is important for me to outperform my co-workers.

34. ____ I try to avoid competitive situations.

35. ____ I like to take classes that challenge me.

36. ____ I compete with myself -- challenging myself to do things better than I have done before.

37. ____ Whether or not I feel good about my performance depends on how it compares to the performance of others.

38. ____ I would rather cooperate than compete.

39. ____ I am an intellectually curious person.

40. ____ I set high standards for myself and work toward achieving them.

41. ____ I am motivated to do things better than others.

42. ____ I like to turn things into a competition.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

43. ____ I prefer activities that provide me the opportunity to learn something new.

1	2	3	4	5	6
♦	♦	♦	♦	♦	♦
Very **UNTRUE** Of Me	**UNTRUE** of Me	Somewhat **UNTRUE** of Me	Somewhat **TRUE** of Me	**TRUE** of Me	Very **TRUE** of Me

44. ____ I work hard at everything I undertake until I am satisfied with the result.
45. ____ I strive to do my job better than the people I work with.
46. ____ Even in non-competitive situations, I find ways to compete with others.
47. ____ I am naturally motivated to learn.
48. ____ I do not set difficult goals for myself.
49. ____ I compare my performance to that of others.
50. ____ I thirst for knowledge.
51. ____ My personal standards often exceed those required for the successful completion of a project.
52. ____ I prefer to do things that I can do well rather than things that I do poorly.
53. ____ On most jobs, people can pretty much accomplish whatever they set out to accomplish.
54. ____ The things I enjoy the most are the things I do the best.
55. ____ When I have difficulty solving a problem, I enjoy trying different approaches to see which one will work.
56. ____ I feel smart when I do something without making any mistakes.
57. ____ I try hard to improve on my past performance.
58. ____ I like to work on tasks that I have done well on in the past.
59. ____ I feel smart when I can do something better than most other people.
60. ____ Even if I know that I did a good job on something, I'm satisfied only if others recognize my accomplishments.
61. ____ It's important to impress others by doing a good job.
62. ____ The opportunity to do challenging work is important to me.
63. ____ When I fail to complete a difficult task, I plan to try harder the next time I work on it.
64. ____ I prefer to work on tasks that force me to learn new things.
65. ____ The opportunity to learn new things is important to me.
66. ____ I do my best when I'm working on a fairly difficult task.
67. ____ I like to be fairly confident that I can successfully perform a task before I attempt it.
68. ____ The opportunity to extend the range of my abilities is important to me.
69. ____ The opinions others have about how well I can do certain things are important to me.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

70. ____ I'm happiest at work when I perform tasks on which I know that I won't make any errors.

71. ____ Your performance on most tasks or jobs increases with the amount of effort you put into them.

How sure are you that you could resist the urge to smoke:

1 ♦	2 ♦	3 ♦	4 ♦
NOT AT ALL SURE	**A LITTLE UNSURE**	**PRETTY SURE**	**VERY SURE**

72. ____ when you feel frustrated.
73. ____ when you are worried.
74. ____ when you feel upset.
75. ____ when you feel tense.
76. ____ when you feel nervous.
77. ____ when you feel angry.
78. ____ when you feel depressed.
79. ____ when someone offers you a cigarette.
80. ____ when you are drinking an alcoholic beverage.
81. ____ when you are drinking coffee or tea.
82. ____ when you are with friends who smoke.
83. ____ when you are at a bar.

Please indicate how true the following statements are of you.

1 ♦	2 ♦	3 ♦	4 ♦	5 ♦	6 ♦
Very **UNTRUE** Of Me	**UNTRUE** of Me	Somewhat **UNTRUE** of Me	Somewhat **TRUE** of Me	**TRUE** of Me	Very **TRUE** of Me

84. ____ I am 100% committed to quitting smoking.
85. ____ I am willing to do whatever I need to in order to quit smoking.
86. ____ I'm not going to let anything stop me from quitting smoking.
87. ____ Someday I will be an ex-smoker.
88. ____ I expect that I will be able to keep from smoking in the future.
89. ____ I am confident in becoming a nonsmoker.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Please circle the response that is true of you.

89. Gender:
    1) Male
    2) Female

90. What is your age:_____________.

91. How would you describe your ethnic background? (check all that apply)
    - ❑ Non-Hispanic White
    - ❑ Hispanic
    - ❑ Asian/Pacific Islander
    - ❑ African-American
    - ❑ Native American
    - ❑ Other specify__________________

92. How many years have you been smoking:__________________.

93. What is the average number of cigarettes you consume per day:________________.

94. Have you ever used a formal smoking cessation program in the past?
    1) Yes
    2) No

95. If you answered yes to question 94, please indicate how many different programs you have tried. ___________

96. Have you smoked a cigarette in the past 24-hours?
    1) Yes
    2) No

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

The following information is needed to mail you future surveys and your cash reimbursements for the time you spend completing the surveys. This contact information will be destroyed at the end of the study.

The agency that is providing you with smoking cessation services has asked to have access to your contact information (e.g., address and phone number). They would like to use this updated information to contact you and ask you a few questions about your experiences with their program. This information will be used to improve the smoking cessation services they provide to the community. Indicate below if you would not like your contact information to be shared.

☐ I would **not** like my contact information shared with the agency that provides me with smoking cessation services.

First Name: ____________________

Last Name: ____________________

Circle one: Mrs. Ms. Mr.

Current Mailing Address:

Street:____

Apartment #:____

City:____________________________State:____________Zip Code:_____________

Current Home Phone Number:____

Work Phone Number:____

Cell Phone Number:____

Email Address:____

Permanent Phone Number (if different than current):

Permanent Home Phone Number:____

Please provide the name of someone who will always be able to contact you in the event that you move during this study. We may contact this person in the event that we can not locate you:

Name:____

Phone Number:____

☐ Please check here if you would like a copy of the final report mailed to you at the end of this study.

FOLLOW-UP SURVEY

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

For questions 1 – 20 please use the following directions. What are your reasons for wanting to quit smoking **at this time?** Below is a list of reasons that smokers may have for quitting. Read each reason and decide how true it is of you **right now.** Remember, there are no "right" or "wrong" reasons for wanting to quit smoking. Any reason is a good one!

1 ♦	2 ♦	3 ♦	4 ♦	5 ♦	6 ♦
Very **UNTRUE** Of Me	**UNTRUE** of Me	Somewhat **UNTRUE** of Me	Somewhat **TRUE** of Me	**TRUE** of Me	Very **TRUE** of Me

I WANT TO QUIT SMOKING:

1. ____ Because I am concerned that I will suffer from a serious illness if I don't quit smoking.
2. ____ To show myself that I can quit smoking if I really want to.
3. ____ So that my hair and clothes won't smell.
4. ____ Because my spouse, children, or other person I am close to will stop nagging me if I quit smoking.
5. ____ Because I have noticed physical symptoms that smoking is hurting my health.
6. ____ Because I will like myself better if I quit smoking.
7. ____ So that I will save money on smoking related costs such as dry cleaning.
8. ____ Because someone has given me an ultimatum (made a threat) to quit.
9. ____ Because I can graphically picture the effects that smoking has on my body.
10. ____ So that I can feel in control of my life.
11. ____ Because I won't burn holes in clothing or furniture.
12. ____ Because I will receive a special gift if I quit.
13. ____ Because I have known other people who have died from serious illnesses that were caused by smoking.
14. ____ Because quitting smoking will prove that I can accomplish other things that are important to me.
15. ____ Because I want to save money that I spend on cigarettes.
16. ____ Because people I am close to will be upset with me if I don't quit.
17. ____ Because I am concerned that smoking will shorten my life.
18. ____ To prove to myself that I am not addicted to cigarettes.
19. ____ So that I won't have to clean my house or car as often.
20. ____ Because I will receive a financial reward for quitting (money from a friend or family member, bonus from work, etc.).

The next two questions ask you about your experiences so far with quitting.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

21. ____ Over the past week, how many people, including your counselor or health educator, family, friends, or co-workers, have you talked with about trying to quit smoking? (You may enter that number in the provided blank. If you are not sure about the exact number of people, please provide your best estimate of the number of people).

22. ____ Over the past week, how many special favors, such as favorite meals and gifts, have you received for trying to quit smoking?

1 ♦	2 ♦	3 ♦	4 ♦
NOT AT ALL SURE	A LITTLE UNSURE	PRETTY SURE	VERY SURE

How sure are you that you could resist the urge to smoke:

23. ____ when you feel frustrated.
24. ____ when you are worried.
25. ____ when you feel upset.
26. ____ when you feel tense.
27. ____ when you feel nervous.
28. ____ when you feel angry.
29. ____ when you feel depressed.
30. ____ when someone offers you a cigarette.
31. ____ when you are drinking an alcoholic beverage.
32. ____ when you are drinking coffee or tea.
33. ____ when you are with friends who smoke.
34. ____ when you are at a bar.

Please indicate how true the following statements are of you.

1 ♦	2 ♦	3 ♦	4 ♦	5 ♦	6 ♦
Very **UNTRUE** Of Me	**UNTRUE** of Me	Somewhat **UNTRUE** of Me	Somewhat **TRUE** of Me	**TRUE** of Me	Very **TRUE** of Me

35. ____ I am 100% committed to quitting smoking.
36. ____ I am willing to do whatever I need to in order to quit smoking.
37. ____ I'm not going to let anything stop me from quitting smoking.
38. ____ Someday I will be an ex-smoker.
39. ____ I expect that I will be able to keep from smoking in the future.
40. ____ I am confident in becoming a nonsmoker.

The last time we received a survey from you was ____________ and at that time you reported that you were ________ currently smoking.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

41. ____ How many smoking cessation sessions have you attended (individual or group)?

42. ____ What type of smoking cessation sessions have you received?
1) Individual
2) Group
3) Both individual and group
4) Other (please specify________________________________)

43. ____ Where do you receive your smoking cessation sessions?
1) Hartshorn Health Center at CSU
2) Health Bridge at Poudre Health Services District
3) Other (please specify________________________________)

44. ____ What is the average number of cigarettes per day that you have smoked over the past seven days? (no fractions)

45. ____ Have you smoked a cigarette in the past 24-hours?
1) Yes
2) No

46. ____ Have you gone for a period of 24-hours or more without smoking since the last time we contacted you?
1) Yes
2) No

If you answered No (or 2) to question 46 you may skip to question 49, otherwise continue to question 47.

47. ____ Have you had a slip (e.g., smoking part or all of a cigarette after at least 24 hours of being smoke free) since the last time we contacted you?
1) Yes
2) No

48. ____ How long did you continue to smoke during that slip before you quit again (or went at least 24 hours without smoking)? If you had more than one slip since we last contacted you please answer the question using your most recent slip.
1) One day
2) Two days
3) Three days
4) Four days
5) Five days
6) Six days
7) Seven days
8) More than seven days until I went another 24-hours without smoking.
9) I have not had a 24 hour smoke free period since that time.

The format for questions on the next section of this survey is different than the format for questions you have answered above. Be sure to carefully read all of the instructions at the top of the page. You will skip some of the questions on the next section depending upon if you have smoked a cigarette in the past 24-hours.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

In the next section you will be asked to provide a reason or cause for your behavior. You will then be asked to answer some questions about the cause you gave. Below is a sample question.

Sample Question:

Is the cause:

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

Mark
1 ➔ *if you believe the cause is* ***totally due*** *to other people or circumstances*
2 ➔ *if you believe the cause is* ***mostly due*** *to other people or circumstances*
3 ➔ *if you believe the cause is* ***somewhat due*** *to other people or circumstances*
4 ➔ *if you believe the cause is* ***equally due*** *to other people or circumstances and to yourself*
5 ➔ *if you believe the cause is* ***somewhat due*** *to yourself*
6 ➔ *if you believe the cause is* ***mostly due*** *to yourself*

Please continue to the next page.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Answer the following questions if you have been smoke free for the past 24 hours. If you have smoked part or all of a cigarette in the past 24 hours skip to page 8.

Instructions:

Think about why you have been able to quit smoking. Please write down in the blank provided the single most important or main cause for why you have been able to quit. While events may have many causes, we want you to pick only one – the *major* cause or reason for your quitting.

49. The single most important or main cause for my success in quitting is:____________________________

Instructions:

Next we want you to answer some questions about the *cause* you just gave. Circle the one number that best matches your opinion.

50. Is the cause:								
Totally due to other people or circumstances	1	2	3	4	5	6	7	Totally due to me
51. In the future, will this cause again be present?								
Will never again be present	1	2	3	4	5	6	7	Will always be present
52. Does the cause:								
Influence just this particular situation	1	2	3	4	5	6	7	Influence all situations in my life
53. Is the cause something that:								
Reflects an aspect of yourself	1	2	3	4	5	6	7	Reflects an aspect of the situation
54. Is the cause:								
Controllable by you or other people	1	2	3	4	5	6	7	Uncontrollable by you or other people
55. Is the cause something that is:								
Permanent	1	2	3	4	5	6	7	Temporary
56. Is the cause something that is:								
Intended by you or other people	1	2	3	4	5	6	7	Unintended by you or other people
57. Is the cause something that is:								
Outside of you	1	2	3	4	5	6	7	Inside of you
58. Is the cause something that is:								
Variable over time	1	2	3	4	5	6	7	Stable over time
59. Is the cause:								
Something about you	1	2	3	4	5	6	7	Something about other people
60. Is the cause something that:								
Could be changed	1	2	3	4	5	6	7	Could not be changed
61. Is the cause something for which:								
No one is responsible	1	2	3	4	5	6	7	Someone is responsible

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

You have been smoke free for the past 24-hours. **Since we last contacted you**, did you have a period of at least 24 hours of being smoke free followed by smoking part or all of a cigarette before your current quit episode? We will refer to this as a relapse. A relapse would be any smoking after a period of at least 24 hours of being smoke free. Answer the following questions only if you had a relapse since we last contacted you.

Instructions:

☐ Check the box only if you did not have a relapse before your current quitting. If you checked the box and **did not have a relapse you are now finished with the survey.** Please mail this survey in the self-addressed and stamped envelope to receive your $10 reimbursement.

62. The single most important or main cause for my relapse was:______________________________

Instructions:

Next we want you to answer some questions about the *cause*. Circle the one number that best matches your opinion.

63. Is the cause:

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

64. In the future, will this cause again be present?

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

65. Does the cause:

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

66. Is the cause something that:

Reflects an aspect of yourself	1	2	3	4	5	6	7	Reflects an aspect of the situation

67. Is the cause:

Controllable by you or other people	1	2	3	4	5	6	7	Uncontrollable by you or other people

68. Is the cause something that is:

Permanent	1	2	3	4	5	6	7	Temporary

69. Is the cause something that is:

Intended by you or other people	1	2	3	4	5	6	7	Unintended by you or other people

70. Is the cause something that is:

Outside of you	1	2	3	4	5	6	7	Inside of you

71. Is the cause something that is:

Variable over time	1	2	3	4	5	6	7	Stable over time

72. Is the cause:

Something about you	1	2	3	4	5	6	7	Something about other people

73. Is the cause something that:

Could be changed	1	2	3	4	5	6	7	Could not be changed

74. Is the cause something for which:

No one is responsible	1	2	3	4	5	6	7	Someone is responsible

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Answer the following questions if you have had part or all of a cigarette in the past 24 hours.

Instructions:
Think about why you have **not** been able to quit smoking. Please write down in the blank provided the single most important or main cause for why you have not been able to quit. While events may have many causes, we want you to pick only one – the *major* cause or reason for your smoking.

49. The single most important or main cause for my not being able to quit smoking cigarettes is:___
____.

Instructions:
Next we want you to answer some questions about the *cause*. Circle the one number that best matches your opinion.

50. Is the cause:								
Totally due to other people or circumstances	1	2	3	4	5	6	7	Totally due to me
51. In the future, will this cause again be present?								
Will never again be present	1	2	3	4	5	6	7	Will always be present
52. Does the cause:								
Influences just this particular situation	1	2	3	4	5	6	7	Influences all situations in my life
53. Is the cause something that:								
Reflects an aspect of yourself	1	2	3	4	5	6	7	Reflects an aspect of the situation
54. Is the cause:								
Controllable by you or other people	1	2	3	4	5	6	7	Uncontrollable by you or other people
55. Is the cause something that is:								
Permanent	1	2	3	4	5	6	7	Temporary
56. Is the cause something that is:								
Intended by you or other people	1	2	3	4	5	6	7	Unintended by you or other people
57. Is the cause something that is:								
Outside of you	1	2	3	4	5	6	7	Inside of you
58. Is the cause something that is:								
Variable over time	1	2	3	4	5	6	7	Stable over time
59. Is the cause:								
Something about you	1	2	3	4	5	6	7	Something about other people
60. Is the cause something that:								
Could be changed	1	2	3	4	5	6	7	Could not be changed
61. Is the cause something for which:								
No one is responsible	1	2	3	4	5	6	7	Someone is responsible

Answer the following questions if you had at least 24 hours being smoke free since we last contacted you **and** you are currently smoking. This will be referred to as a relapse. The following questions ask you about your current relapse.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

☐ Check the box only if you have not been smoke free for a period of at least 24 hours since we last contacted you. If you checked the box and **did not have a relapse you are now finished with the survey.** Please mail this survey in the self-addressed and stamped envelope to receive your $10 reimbursement.

Instructions:

Think about why you have relapsed. Please write down in the blank provided the single most important or main cause for your relapse. While events may have many causes, we want you to pick only one – the *major* cause or reason for your smoking.

62. The single most important or main cause for my relapse is:________________________________

Instructions:

Next we want you to answer some questions about the *cause*. Circle the one number that best matches your opinion

63. Is the cause:

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

64. In the future, will this cause again be present?

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

65. Does the cause:

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

66. Is the cause something that:

Reflects an aspect of yourself	1	2	3	4	5	6	7	Reflects an aspect of the situation

67. Is the cause:

Controllable by you or other people	1	2	3	4	5	6	7	Uncontrollable by you or other people

68. Is the cause something that is:

Permanent	1	2	3	4	5	6	7	Temporary

69. Is the cause something that is:

Intended by you or other people	1	2	3	4	5	6	7	Unintended by you or other people

70. Is the cause something that is:

Outside of you	1	2	3	4	5	6	7	Inside of you

71. Is the cause something that is:

Variable over time	1	2	3	4	5	6	7	Stable over time

72. Is the cause:

Something about you	1	2	3	4	5	6	7	Something about other people

73. Is the cause something that:

Could be changed	1	2	3	4	5	6	7	Could not be changed

74. Is the cause something for which:

No one is responsible	1	2	3	4	5	6	7	Someone is responsible

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.