CIGARETTE SMOKING AND REPRESSIVE COPING:
AN EXAMINATION OF SUSCEPTIVITY
TO ANTI-SMOKING MESSAGES

Thesis
Submitted to
The College of Arts and Sciences of the
UNIVERSITY OF DAYTON

In Partial Fulfillment of the Requirements for
The Degree
Master of Arts in Clinical Psychology

by
Lisa Maria Elizabeth Frantsve

UNIVERSITY OF DAYTON
Dayton, Ohio
June 1996
APPROVED BY:

Roger M. Reeb, Ph.D.
Chairperson, Thesis Committee

John K. Korte, Ph.D.
Thesis Committee Member

Donald J. Polzella, Ph.D.
Thesis Committee Member

CONCURRENCE:

F. Thomas Eggemeier, Ph.D.
Chairperson, Department of Psychology
ABSTRACT

CIGARETTE SMOKING AND REPRESSIVE COPING: AN EXAMINATION OF SUSCEPTIBILITY TO ANTI-SMOKING MESSAGES

Name: Frantsve, Lisa Maria Elizabeth
University of Dayton, 1996
Advisor: Dr. Roger N. Reeb

Past research has identified a subgroup of individuals known as repressors who (a) report low levels of subjective distress when encountering a stressor but (b) concurrently exhibit physiological and/or behavioral evidence of distress. Since repressors are able to effectively minimize threatening information, the purpose of the present study was to examine the extent to which repressive coping plays a role in the maintenance of cigarette smoking for some individuals, making them less susceptible to anti-smoking information. Three specific hypotheses were tested. First, in keeping with past research examining repressors' reactions to stress, it was hypothesized that smokers who employ repressive coping strategies would demonstrate more physiological reactivity during an anti-smoking videotape presentation than smokers who employ more adaptive coping strategies. This hypothesis was partially supported, suggesting that smokers with a repressive coping style (a) demonstrated higher levels of physiological reactivity on one of the three dependent measures when compared to high-anxious smokers, and (b) demonstrated higher levels of physiological reactivity on two of the
three dependent measures when compared to low-anxious smokers. The second hypothesis was that smokers in the repressor group would report less subjective emotionality after watching the anti-smoking presentation than their low- or high-anxious counterparts. This hypothesis was not supported, suggesting that all smokers reported similar levels of subjective emotionality after watching the anti-smoking presentation, regardless of their predominant coping style. Third, it was hypothesized that smokers in the repressor group would endorse more rationalizations about their cigarette smoking than would low- or high-anxious smokers. This hypothesis was not supported, suggesting that all smokers endorsed relatively few rationalizations about smoking, regardless of their predominant coping style. Analysis of the study indicates that there were methodological limitations, particularly concerning attempts to test Hypotheses 2 and 3. Theoretical and practical implications are discussed, and recommendations for future research attempting to address the limitations of the present study are included.
ACKNOWLEDGEMENTS

I would like to thank my thesis chair, Dr. Roger N. Reeb, for his guidance, support, and collaboration throughout this project and my committee members, Drs. John R. Korte and Donald J. Polzella, for their assistance in this study. I am also grateful to Daniel Stradtman, Julie Offhaus, Christina Smith, and William Karban for the many hours they helped me in preparing questionnaire packets, running subjects, and inputting data.

I would also like to thank the Youngstown, Ohio chapter of the American Lung Association for graciously allowing me to borrow the videotape presentation, Dying for A Smoke, for the duration of data collection.

In addition, I am indebted to my parents, Dennis J. and Julieta M. Frantsve, for providing me with many enriching educational opportunities throughout my life, including my graduate training at The University of Dayton. I would also like to thank the many friends and family members have supported my career endeavors.
TABLE OF CONTENTS

ABSTRACT ....................................................................................................................... iii

ACKNOWLEDGMENTS .................................................................................................. v

LIST OF TABLES ........................................................................................................... viii

CHAPTER

I. INTRODUCTION ........................................................................................................ 1

The Anti-Smoking Campaign
   A Brief History
   Smokers’ Reactions to the Anti-Smoking Campaign
   Cognitive Orientation Theory
   Coping Strategies
   Conscious Processes to Resolve Cognitive Dissonance
   Defense Mechanisms: Repression

Construct Validity for the Repressive Coping Style
   Early Studies on Repression
   Recent Studies on Repression

The Present Study

II. METHOD ............................................................................................................... 22

Participants
Materials and Apparatus
   Anti-Smoking Presentation
   Measurement of Physiological Reactivity
   Measurement of Subjective Emotionality
   Psychometric Measurement of Rationalizations About the Health Hazards Associated with Smoking
   Psychometric Measurement of Repression
   Marlowe-Crowne Scale
   Taylor Manifest Anxiety Scale
Table of Contents (continued)

II. METHOD (continued) ................................................................. 22
   Marlow-Crowne and Taylor Manifest Anxiety Composite Procedures

III. RESULTS .............................................................................. 32
   Examination of Hypothesis 1
   Examination of Hypothesis 2
   Examination of Hypothesis 3

IV. DISCUSSION ........................................................................ 40
   Hypothesis 1
   Hypothesis 2
   Hypothesis 3
   Summary and Conclusions

APPENDICES

A. Self-Assessment Mannikin ..................................................... 49
B. Abbreviated Rationalization Scale ......................................... 50
C. Marlowe-Crowne Scale ....................................................... 51
D. Taylor Manifest Anxiety Scale ............................................. 53
E. Marlowe-Crowne and Taylor Manifest Anxiety Composite .... 55
F. Demographic Questionnaire .................................................. 57
G. Informed Consent To Participate As a Research Subject ........ 59
H. Debriefing Form ................................................................. 61

REFERENCES ................................................................. 62
LIST OF TABLES

Distributions of Demographic Characteristics ........................................................... 23

Means and Standard Deviations of Physiological Reactivity Levels at Baseline and During the Anti-Smoking Videotape Presentation ............................................. 33

Means and Standard Deviations of Transformed Physiological Data ..................... 34

Means and Standard Deviations of Subjective Emotionality Data After Watching the Anti-Smoking Videotape Presentation ......................................................... 37

Means and Standard Deviations of Total Number of Smoking Rationalizations Endorsed After Watching the Anti-Smoking Videotape Presentation ................. 39
CHAPTER 1
INTRODUCTION

Within recent decades, research has indicated a strong association between cigarette smoking and the following physical disorders: heart diseases, lung diseases, and several forms of cancer (e.g., Brantley & Garrett, 1993; Kannel & McGee, 1985; Oei & Fea, 1987; Russell & Epstein, 1988). Additionally, numerous deleterious effects on the unborn fetuses of pregnant smokers have been documented (e.g., Kleinman et al., 1988). Recent reports indicate that "[s]moking kills 434,000 Americans each year" (U.S. Department of Health and Human Services, 1994, p. i), leading many to claim that cigarette smoking is the leading cause of preventable death in the United States (e.g., Brantley & Garrett, 1993; Milhorn, Jr., 1990). Knowledge of these health hazards has prompted public action aimed at discouraging cigarette smoking. Although this so-called "anti-smoking campaign" has been effective in producing an overall steady decline in the total number of smokers (Public Health Service, 1989), effective cigarette marketing recruited approximately one million new smokers per year among the young adult population during the 1980’s. If these trends continue, experts projected that forty million Americans, or 22% of the adult population, will become regular smokers by the year 2000 (Pierce et al., 1989b).
Given the fact that some Americans continue to smoke despite the pervasive anti-smoking campaign, researchers have proposed various maintenance factors that may contribute to cigarette smoking. Current biopsychosocial models have focused on physical addiction to nicotine (Jarvik, 1977; U.S. Public Health Service, 1988), sociocultural factors such as peer pressure (Sarason et al., 1992), psychological benefits such as using smoking as a coping method (Hasenfratz & Battig, 1993; Revell, Warburton, & Wesnes, 1985), and the increase of mental acuity due to nicotine (Wesnes & Warburton, 1984). However, these models focused on explaining why individuals continue to smoke and neglect investigating how certain smokers avoid the full impact of the anti-smoking message. Only recently have researchers begun to address this issue. For instance, McMaster and Lee (1991) have discussed strategies to resolve cognitive dissonance that smokers may use to evade information concerning the health hazards associated with cigarette use.

The purpose of this study is to explore one possible underlying mechanism that may assist some smokers in minimizing or ignoring the anti-smoking message. Specifically, this study investigated the possible role of repressive coping in the maintenance of cigarette smoking for some individuals. Because repression has been empirically demonstrated as a means by which an individual can avoid conscious knowledge of a noxious stimuli (Weinberger, 1990), it is hypothesized that cigarette smokers who concomitantly utilize repressive coping mechanisms would respond to an anti-smoking presentation by reporting minimal distress while indicating evidence of physiological distress by demonstrating high levels of physiological reactivity.
The introduction integrates several lines of research to provide the necessary framework for understanding the fundamental aspects of the present research project. Hence, the introduction is divided into the following three sections: (1) a historical account of the anti-smoking campaign, and a review of a theoretical model that attempts to explain how some smokers may avoid or minimize anti-smoking messages; (2) an overview of research demonstrating the construct validity for repressive coping style; and (3) an overview of the approach used in the present study.

The Anti-Smoking Campaign

A Brief History

In 1900, statisticians first reported an increase in lung cancer in the American population. This report sparked research to determine if cigarette smoking was a contributing factor to this rise in cancer incidence. By the 1950’s, the relationship between cigarette smoking and physical illnesses became more evident; several retrospective and prospective studies indicated that smoking was possibly linked to cancer, as well as to cardiovascular and coronary heart diseases.

The United States Public Health Service became officially involved in investigating the health hazards of cigarette smoking in June of 1956. The Surgeon General assigned a scientific study group consisting of experts from the National Cancer Institute, the National Heart Institute, the American Cancer Society, and the American Heart Association to review the existing studies on cigarette use and issue a formal government report. This report, which concluded that smoking was indeed

This government report instigated an immediate wave of legislative action. In 1965, the United States government mandated warning labels on all cigarette packages. Despite a strong lobby from the tobacco industry, the warning label mandates were revised in 1970 and 1984 and continue to be active federal law (Federal Cigarette Labeling and Advertising Acts, 1965, and Supp. 1970, 1984). In the 1970’s, additional laws were passed that banned radio and television cigarette advertising (cited in Myers et al., 1981).

Currently, various forces are actively educating the American public on the health hazards of smoking and discouraging individuals from initiating or continuing this behavior. For example, the American Heart, Cancer, and Lung Associations all produce numerous publications and educational media as well as sponsoring workshops and community events that promote cigarette abstinence. Several researchers have implemented local or national anti-smoking mass media campaigns which sometimes include concurrent school-based prevention programs (e.g., Flynn et al., 1992; Flynn et al., 1994; Geller & Costanza, 1992; Wagenknecht et al., 1990). Although recent studies have questioned the efficacy of these programs at educating minority and undereducated populations (e.g., Pierce et al., 1989a), the general concurrence is that these anti-smoking messages reach a significant portion of the current American population (Macaskill et al., 1992). The interested reader is referred to the original Surgeon General’s report on smoking and health (U.S.
Department of Health, Education, and Welfare, 1964) for a more detailed historical account of the anti-smoking campaign.

Smokers’ Reactions to the Anti-Smoking Campaign

Although several studies have indicated that the anti-smoking campaign is an effective deterrent to smoking (e.g., Macaskill et al., 1992), a significant number of Americans continue to smoke. In fact, recent statistics indicate an estimated 3.1 million 17- and 18-year-olds are regular smokers (U.S. Department of Health and Human Services, 1994). Indeed, some of these individuals are aware of the deleterious effects of cigarette use and indicate a desire to quit smoking. Nonetheless, these individuals may continue to smoke in order to avoid physiological withdrawal symptoms (U.S. Public Health Service, 1988; Jarvik, 1977) or until they encounter an effective cessation program (Breteler, Mertens, & Rombouts, 1990).

At any rate, it appears that some individuals continue to smoke while denying or minimizing the full impact of anti-smoking messages (e.g., Hansen & Malotte, 1986). This situation gives rise to two fundamental questions: (1) How do these individuals justify their smoking in light of the widespread knowledge that smoking has numerous deleterious effects? (2) Which psychological mechanisms may be involved in the smoker’s ability to avoid or negate the evidence presented by the anti-smoking campaign? At this point, we turn to a discussion of Cognitive Orientation Theory, which provides the framework from which we can address these issues.
Cognitive Orientation Theory

The basic premise of Kreitler and Kreitler's (1976, 1982) Cognitive Orientation (CO) Theory is that an individual's underlying cognitive dynamics serve as the best predictor of subsequent behavior. The concept of cognitive dissonance, as first proposed by Festinger (1957), is central to CO Theory. In *A Theory of Cognitive Dissonance*, Festinger (1957) suggested that individuals with conflicting belief systems avoid situations or minimize information that highlights these differences in an effort to decrease dissonance. Campbell (1984) described a relevant example of cognitive dissonance: “[O]ne might reduce the dissonance produced by the cognitions ‘I smoke’ and ‘Smoking causes cancer’ ... by denying or denigrating the evidence linking to cancer” (p. 235).

Unlike other theories (e.g., Ajzen & Fishbein, 1980), CO Theory does not assume that all cognitions are rational, controllable, or conscious. Overall, CO Theory suggests that smokers may resolve cognitive dissonance by employing (a) conscious coping strategies or (b) unconscious defensive maneuvers. These two general methods are briefly described below.

**Coping Strategies.** In considering conscious coping strategies, it is helpful to focus on Lazarus' transactional model, which is the most widely accepted model of coping. According to this model, coping is defined as “constantly changing cognitive and behavioral efforts to manage specific external and/or internal demands” (Lazarus & Folkman, 1984 p. 141). Two key concepts are inherent in this model: cognitive appraisal and functions of coping.
Cognitive appraisal refers to the methods an individual employs to categorize a stressor. There are three stages of cognitive appraisal. During the first stage, primary appraisal, the individual attempts to assess the personal significance of an event or stressor (i.e., helpful, harmful, irrelevant, etc.). In secondary appraisal, the individual decides what response is appropriate. In the last stage, reappraisal, the individual uses feedback from the environment to assess the situation and decide if further response is required. An example would be a smoker who hears about the health risks of smoking, decides whether he or she is at risk, and then exhibits some behavior based on this appraisal.

The transactional model also states that there are two predominant functions of coping: problem-focused and emotion-focused. In problem-focused coping, the individual takes an active and direct approach to deal with the situation; hence, in problem-focused coping, the individual tries to gain information about a stressor and may also try to control, prevent, or minimize the impact of the stressor. This type of coping is most effective when an individual is dealing with a controllable stressor. Thus, an example of problem-focused coping is a smoker who obtains as much information as possible about smoking-related risks and then actively pursues a smoking cessation program. In contrast, individuals employing emotion-focused coping typically distance themselves, avoid a stressor, or seek emotional support. This type of coping is most beneficial when one is presented with a non-controllable situation. The theoretical and empirical literature also suggests that neither approach is ultimately better; rather, depending on the situation, one approach may be more
appropriate than the other, or a mix of emotion- and problem-focused coping may be most effective. As reviewed below, some researchers have attempted to understand the ways in which some smokers employ emotion-focused coping strategies to resolve cognitive dissonance that may follow exposure to anti-smoking messages.

**Conscious Processes to Resolve Cognitive Dissonance.** Tagliacozzo (1981) was one of the first investigators who suggested that smokers may be in a state of cognitive dissonance since they continue to smoke despite knowledge of its deleterious effects. Since then, several studies have attempted to verify the role of cognitive dissonance in smoking. For example, Lee (1989) compared smokers' and nonsmokers' ratings of health risk. Each subject was asked to rate from 0 "no chance" to 100 "certain to happen" the probability that an average Australian smoker would contract a given disease. Afterwards, the subjects were asked to rate their own probability of contracting the same physical diseases. Results indicated that smokers tended to minimize the risk of various physical diseases for both themselves and the average Australian smoker. In addition, smokers indicated that they were less likely to contract a physical illness than the typical smoker -- a phenomenon that Lee described as "personal immunity." Lee suggested that cognitive dissonance may account for the difference in ratings between smokers and nonsmokers.

In a later collaboration, McMaster and Lee (1991) investigated if information avoidance or minimization was the predominant strategy for resolving cognitive dissonance among cigarette smokers. Subjects responded to a four part questionnaire. The first part consisted of demographic items (e.g., age, sex, smoking
status, etc.). In the second section, smokers were asked to agree or disagree with twenty-two rationalizations about smoking (e.g., “Smokers can usually tell if they are being harmed by cigarettes”). Items emphasizing factual knowledge about smoking and its consequences were presented in an agree-disagree format in the third section. The fourth section, in which smokers indicated the likelihood of an average smoker, ex-smoker, non-smoker, or themselves contracting various illnesses, paralleled her earlier study. Results indicated a significant difference on the second scale, with smokers significantly more likely to endorse smoking rationalization items than either ex-smokers or non-smokers. However, no significant difference in factual knowledge about smoking was evidenced, suggesting that all groups were adequately aware of the health hazards associated with cigarette smoking. Interestingly, the ordering of participants’ ratings concerning the likelihood to contract a physical disorder due to cigarette smoking from “most likely” to “least likely” was: (1) the average smoker, (2) themselves, (3) ex-smokers, and (4) non-smokers. Thus, McMaster and Lee (1991, p. 352) concluded: “There is no evidence in this study that smokers reduce cognitive dissonance about smoking by avoiding information ... However, it may be that a more subtle way of minimizing dissonance is employed.” Thus, these researchers suggested that some smokers may employ unconscious defensive mechanisms in which anti-smoking messages become distorted or minimized in order to resolve cognitive dissonance or to obtain a sense of “personal immunity.”
Defense Mechanisms: Repression. While Lee (1989) and McMaster and Lee (1991) suggested that smokers may distort information in order to reduce cognitive dissonance, they did not address how smokers distort information. One possibility is that unconscious defense mechanisms may provide one means by which some smokers effectively resolve cognitive dissonance. Moreover, CO theory further supports the notion that defense mechanisms, such as repression, may play a role in maintaining smoking behavior of some individuals, though this hypothesis has not been examined in past research. This study investigates the possibility that a subgroup of individuals employ repressive coping in resolving the conflict between knowledge from the anti-smoking media and continued cigarette smoking. Repressive coping is not suggested as a rival explanation to cognitive dissonance theory; rather, repression is hypothesized to be another variable that helps in explaining why some individuals continue to smoke despite convincing evidence of physical risk. Thus, repressive coping may be one mechanism used by some smokers in resolving cognitive dissonance. Although past research has not examined the role of repression in maintaining the smoking behavior of some individuals, there is an impressive body of evidence of the construct validity for the repressive coping style. An overview of this research is provided in the next section.

Construct Validity For The Repressive Coping Style

Classically, the concept of repression is associated with Freud’s psychoanalytic theory. Freud considered repression to be the most basic defense mechanisms: as such, it served an unconscious method in which an individual
prevents conscious awareness of threatening material. For instance, Freud (1894/1963, pp. 69-70) describes repression as occurring when the "ego [is] confronted by an experience, an idea, a feeling, arousing an affect so painful that the person resolves to forget it." In a later article entitled Repression, Freud (1915/1957, p. 600) elaborates that "[t]he essence of repression lies simply in turning something away and keeping it at a distance from the conscious."

Contemporary researchers (e.g., Shedler et al., 1993; Weinberger, 1990) have revisited the concept of repression. Similar to Freud, these researchers also believe that repression involves a lack of conscious awareness of selected stimuli. The unique contribution of these modern studies included the formation of an operational definition of repressive coping and empirical evidence attesting to the construct validity of the repression. According to these studies, repressors are defined as individuals that (a) report low levels of subjective distress when encountering a stressor, (b) exhibit physiological and/or behavioral indicators of distress during a stressor, and (c) maintain conscious beliefs that are consistent with their report of low distress (Weinberger, 1990).

Numerous terms have been used to describe essentially the same underlying psychological concept of repressive coping. These various labels include "defensive denial" (Shedler et al., 1993), "inhibition tendency" (Pennebaker, 1993), "cognitive avoidance" (Erdelyi, 1990), "rational antiemotional behaviour" (Grossarth-Maticck & Eysenck, 1990), and "repressive coping style" (Weinberger, 1990). Even Freud addressed repression by various other names such as "dissociation" (Freud,
1892/1966, p. 122), "defense" (Breuer & Freud, 1895/1955, p. 120), and "intentional forgetting" (Freud, 1894, p. 48). Of all these terms, Weinberger (1990) indicates that "repression" is used most often, and he suggests that researchers generally adopt this label. Hence, this study describes repressive behavior by employing the terms "repression" and "repressive coping" interchangeably.

Early Studies on Repression

In his authoritative book, Personality Theory: A Comparative Analysis, Maddi (1989, p. 192-219) presented a review of the early literature on defense with a focus on repression. Maddi (1989, p. 198) stated that "repression involves debarring from awareness any sensation, perception, thought, or action that would conflict with values and principles instilled in you by society." Some of the earliest studies Maddi reviewed demonstrated that psychological processes could prevent threatening stimuli from achieving consciousness. In one study, Bruner and Postman (1947a, 1947b) presented subjects with a word association task. Results indicated variability in the subjects' response time. In the second part, the same words were presented to the subjects using a tachistoscope. Again, a subgroup of subjects had markedly longer response times to certain items. Bruner and Postman suggested that these increased response times were indicative of emotional disturbance. They believed that perceptual mechanisms were operating to prevent these threatening stimuli from becoming conscious by increasing the threshold of recognition. These researchers labeled this phenomenon "perceptual defense" and likened it to repression.
Other studies confirmed conscious avoidance of threatening stimuli. For example, in McGinnies’ (1949) study, participants demonstrated increased galvanic skin response and required longer tachistoscope exposure when presented with socially taboo words versus neutral words. McCleary and Lazarus (1949) controlled for differences in word recognition due to word frequency by conducting a similar experiment using nonsense syllables. In their study, half the syllables were classically conditioned to elicit anxiety by pairing them with one-second exposures to electric shock. After these conditioning trials, subjects were asked to identify neutral and anxiety-producing nonsense syllables presented via a tachistoscope. Results indicated that subjects tended to incorrectly identify and exhibit increased skin response when the anxiety-provoking syllables were presented.

Other studies suggested that repressors characteristically misinterpret threatening stimuli in ways that tend to minimize subjective anxiety. One such study conducted by Lazarus, Eriksen, and Fonda (1951) divided a psychiatric outpatient population into repressors and sensitizers according to Gordon’s (1957) concept “repression-sensitization” theory which differentiated two coping tendencies in the face of threat, i.e., hypervigilance or perceptual defense. Those individuals employing the latter coping style were presumed to be repressors. Participants were then presented with sentence completion items which included aggressive and sexual content. Results indicated that repressors were more likely to block or distort sentence completion items into innocuous forms when compared to sensitizers.
Moreover, repressors had diminished auditory perception of sexual or aggressive sentences heard against a noise background versus sensitizers.

After reviewing these and other early studies, Maddi (1989, p. 215) stated: “... we can now say with some authority that there is evidence supporting the notion of defense as an explanatory concept.” One limitation of these early studies is that many of them used the Repression-Sensitization Scale (R-S Scale) that Byrne (1961) developed and later revised (Byrne et al., 1963). The R-S Scale arose from the personality concept of “repression-sensitization” introduced by Gordon (1957). Although Halperin (1986) and other investigators (e.g., Bell and Byrne, 1978; Byrne, 1964; Krohne and Rogner, 1982; Singer, 1990) suggest that the R-S Scale demonstrated adequate validity in identifying repressors, several researchers have challenged this conclusion (e.g., Tudor & Holmes, 1973; Weinberger, 1990; Weinberger, Schwartz, and Davis, 1979). Most notably, Weinberger (1990. p. 344) argued that the R-S scale “does not distinguish between repressors, who maladaptively avoid the perception or experience of negative affect, and truly low-anxious individuals ... who accurately report being well adjusted and not prone to excessive distress.” Thus, as explained below, Weinberger and colleagues (1979) have developed a different classification system for identifying repressors.

Recent Studies on Repression

Recently, investigations on repressive coping have used the classification system by Weinberger et al. (1979), which incorporates a theoretical understanding that “individuals operationally defined as having a repressive coping style actually
fail to recognize their own affective responses" (Weinberger, 1990 p. 338). These researchers suggest that there are four possible coping styles differentiated by self-report scores on a two scales: the Marlowe-Crowne Scale, an index of “defensiveness and protection of self-esteem” (Crowne & Marlowe, 1964) and the Taylor Manifest Anxiety Scale (TMAS), an index of trait anxiety. Using a two-by-two table, the four possible coping styles included: (1) repressors (high Marlowe-Crowne, low TMAS); (2) low-anxious (low Marlowe-Crowne, low TMAS); (3) high-anxious (low Marlowe-Crowne, high TMAS); and (4) defensive high-anxious (high Marlowe-Crowne, high TMAS), a pattern described as “fairly rare” (Weinberger et al., 1979, p. 371). Other researchers have operationally defined repression in a similar fashion (e.g., Grossarth-Maticek & Eysenck, 1990; Shedler et al., 1993).

Weinberger et al. (1979) conducted a study in which repressors, low-anxious, and high-anxious individuals were presented with a phrase association task including five phrases each concerning neutral, sexual, or aggressive content. Dependent measures included physiological reactivity (heart rate, electrodermal activity, and frontalis muscle tension), behavioral defensiveness (defined by high reaction time, content avoidance, and verbal interference), and a self-report of distress level. Results indicated that repressors and high-anxious individuals demonstrated approximately equal levels of physiological reactivity as measured via heart rate and electrodermal activity, whereas repressors exhibited significantly higher frontalis muscle tension than both the low-anxious and high-anxious groups. Concerning measures of behavioral defensiveness, repressors scored significantly higher in
reaction time, content avoidance, and verbal interference than either the low-anxious or high-anxious groups. Additionally, distress level measures indicated that high-anxious individuals reported the most distress, followed by low-anxious individuals who reported a moderate level, and repressors who reported the lowest level of distress of all three groups. Hence, Weinberger et al. (1979, p. 378) concluded: “This study provides construct validity for the distinctions among low-anxious, high-anxious, and repressive styles as three general patterns of coping with threatening situations.”

Similarly, Shedler et al. (1993) conducted three studies that investigated repressors who maintain the illusion of mental health yet concomitantly manifest distress through behavioral and/or physiological channels. In the first phase of each study, subjects completed a standard self-report measure of mental health (Studies 1 and 2 employed the Eysenck Neuroticism Scale whereas Study 3 employed the Beck Depression Inventory) and were evaluated by clinical judges using the Early Memory Test (EMT). Genuinely healthy subjects were characterized by self-report and EMT evaluations that both indicated mental health. Individuals employing a repressive coping style, on the other hand, were classified by reporting mental health yet being clinically assessed to be distressed. Subjects who both reported and were judged to be distressed were classified as manifestly distressed. In the second phase, subjects were exposed to psychological stressors while heart rate and blood pressure were monitored. Verbal defensiveness measures (i.e., efforts to avoid the content of stimulus phrases) were also assessed in Studies 1 and 2.
In the first study, the psychological stressors included: (1) mental arithmetic problems, (2) Thematic Apperception Test (TAT) testing, and (3) a phrase association test including neutral, aggressive, dependency, and sexual content. Results indicated that individuals employing a repressive coping style exhibited significantly greater coronary reactivity and more verbal manifestations of distress than the genuinely healthy group or the manifestly distressed group. Similar results were obtained in Studies 2 and 3.

Other studies suggest that repressors may even experience greater physiological reactivity than high-anxious subjects (e.g., Hare, 1966; Lazarus & Alfert, 1964; Parsons, Fulgenzi, and Edelberg, 1969; Scarpetti, 1973). Thus, Weinberger (1990) states, “a majority of psychophysiological studies ... have found repressors to be more reactive than their consciously distressed counterparts.” One study that demonstrated an inordinately high amount of physiological reactivity in repressors as compared to all other groups was conducted by Jamner and Schwartz (1985). These researchers characterized nearly two thousand subjects as repressors, high-anxious, low-anxious, or defensive high-anxious using a two-by-two table developed by Weinberger et al. (1979). Measures of cardiovascular reactivity were recorded during three conditions: (1) a resting period, (2) a sentence completion task, and (3) a timed numeric calculation task. Concurrently, self-reports of anxiety, anger, and embarrassment were also obtained. These results indicated that repressors had the greatest cardiovascular reactivity during all three conditions and reported the least amount of negative affect. Likewise, less cardiovascular reactivity was
experienced by defensive high-anxious subjects, followed by high-anxious subjects and then low-anxious subjects. Except for repressors, the remaining groups' self-reports were appropriate to their psychophysiology with both high-anxious groups reporting greater levels of anxiety, anger, or embarrassment than the low-anxious group. In his review, Schwartz (1990, p. 413) emphasized that "[t]he discrepancy between the true low-anxious subjects (whose physiology mirrored their self-perceptions) and the repressive subjects (whose physiology was substantially at odds with their self-perceptions) is striking."

In a similar psychophysiological experiment, Levenson and Mades (1980) measured heart rate, pulse, and skin conductance of repressors and low-anxious individuals while watching a stressful "industrial accidents" videotape. While the results of this study did not indicate a significant difference in skin conductance level between the groups, it did report that repressors demonstrated significantly higher heart rates. The importance of this study is that it illustrates that the psychophysiological "blueprint" of repression (high physiological arousal paired with low self-report of distress) is observable within a videotape paradigm. Thus, the present study employed a similar methodology by measuring psychophysiological reactivity of cigarette smokers watching a anti-smoking presentation on videotape.

In an excellent literature review, Weinberger's (1990) addressed the following question: Do repressors' self-report represent their conscious beliefs, or are repressors' reports reflective of efforts to maximize impression management? Several studies indicated that repressors continue to endorse unrealistic items (e.g., "I
have almost never felt the urge to tell someone off") even when demand characteristics request negative affective expression (Millemet & Cohen, 1973), when their responses are assured anonymity (Weinberger & Schwartz, 1982), or when deceived to believe that monitoring devices can detect if they are lying (Millham & Kellog, 1980). After reviewing these studies, Weinberger (1990, p. 353) concluded: "The evidence contradicts the notion that repressors are adroit social chameleons who are good at testing the winds and telling people what they want to hear." In a study just completed, Weinberger and Davidson (1994) confirmed that repressors’ self-report of low distress reflects their conscious beliefs despite concurrent behavioral and psychological evidence of personal distress.

Regarding the mechanisms by which repressors avoid stressful stimuli, Weinberger (1990) also reviewed studies on selective attention (e.g., Haley, 1974; Holmes, 1974; Mischel, Ebbensen. & Zeiss, 1973), perceptual defense (e.g., Schill & Althoff, 1968), and selective memory (e.g., Davis & Schwartz, 1987). He concluded that some evidence suggests that these phenomena represent "strategies for not knowing" (Weinberger, 1990, p. 362) employed by repressors. The studies reviewed in this section represent a selective portion of the research exploring the concept of repression. The result of these and other studies on repression (e.g., reviewed in Maddi, 1989; Weinberger, 1990) provide significant evidence of the construct validity for the repressive coping style.
The Present Study

As indicated in the previous section, most of the recent studies in the area of repressive coping have compared the following three groups: (a) repressive copers; (b) high-anxious copers; and (c) low-anxious copers. Although these three coping styles have not been investigated within the research on smoking, there is reason to believe these coping styles are represented in the population of smokers. Research examining the relationship between smoking and neuroticism (i.e., low versus high anxiety) has yielded mixed results, with some studies finding that smokers tend to be more anxious than non-smokers (e.g., Cherry & Kiernan, 1976), and others indicating relatively low levels of anxiety among smokers (e.g., Eysenck, 1980). These findings suggest that both low- and high-anxious individuals exist within the smoking population.

In a recent study by Pincus and Boekman (1995), the concept of repression was examined in relation to the five-factor model of personality. In brief, it was found that repressors tend to score low on neuroticism and high on extroversion, agreeableness, and conscientiousness. In regards to the smoking literature, there is some evidence that smokers tend to have higher levels of extroversion relative to non-smokers (e.g., Cherry & Kiernan, 1976; Eysenck, 1983). Further, as reviewed earlier (e.g., McMaster & Lee, 1991) some smokers become defensive about the health implications of their smoking status. In addition, some research (e.g., Grossarth-Maticek, Bastiaans, & Kanazir, 1985) has identified both repressors (they used the equivalent term of “rational antiemotional behaviour”) and non-repressors in
a sample of smokers, with smoking-related health problems disproportionally evident in those smokers with repressive tendencies. Thus, there are sufficient reasons to believe that the three coping styles of interest are represented in the population of smokers.

This project investigated the extent to which smokers who employ repressive coping strategies deny or distort information about the health hazards associated with cigarette smoking relative to smokers who use more adaptive coping styles. Three primary hypotheses were tested. First, in concert with the established literature on the psychophysiological reactivity of repressors, it was hypothesized that smokers with a repressive coping style would demonstrate a significantly greater level of physiological reactivity during the anti-smoking videotape than either their high-anxious or low-anxious counterparts. Second, it was hypothesized that, relative to low-anxious and high-anxious smokers, smokers who employ a repressive coping strategy would report significantly less subjective emotionality during the videotape. Third, smokers with a repressive coping style were hypothesized to endorse significantly more statements that rationalize their smoking behavior when compared to low-anxious and high-anxious smokers.
Sixty-six undergraduate students at the University of Dayton participated in this study. Subjects were recruited from introductory psychology classes and received course credit for their participation. Participants were between the ages of 18 and 34 (M = 18.99, SD = 2.03) years, with more females (62.1%) than males (37.9%) represented in the sample. Table 1 presents distributions of demographic characteristics. The distribution of coping styles among the participants was as follows: (a) 18 repressors; (b) 20 low-anxious; (c) 20 high-anxious; and (d) 10 defensive high-anxious. In concordance with previous research, data associated with participants in the defensive high-anxious group were excluded from data analysis (Weinberger, 1990), yielding 56 participants to be included in data analysis.

Only participants classified as “smokers” were employed. Smoking status was determined by self-report. Several studies have investigated the validity of self-report for classifying smoking status. For example, a meta-analysis conducted by Patrick et al. (1994) investigated whether an individual’s self-report of smoking status tends to concur with confirmatory biochemical analyses. Although these researchers suggested that cotinine-plasma assays should be employed in prevention studies.
Table 1

Distributions of Demographic Characteristics

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18 years old</td>
<td>28</td>
<td>42.4</td>
</tr>
<tr>
<td>19 years old</td>
<td>27</td>
<td>40.9</td>
</tr>
<tr>
<td>20 years old</td>
<td>8</td>
<td>12.1</td>
</tr>
<tr>
<td>21 years old</td>
<td>2</td>
<td>3.0</td>
</tr>
<tr>
<td>Over 21 years old</td>
<td>1</td>
<td>1.5</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>25</td>
<td>37.9</td>
</tr>
<tr>
<td>Female</td>
<td>41</td>
<td>62.1</td>
</tr>
<tr>
<td>Ethnic Background</td>
<td></td>
<td></td>
</tr>
<tr>
<td>White/Caucasian</td>
<td>63</td>
<td>95.5</td>
</tr>
<tr>
<td>Latino/Hispanic</td>
<td>3</td>
<td>4.5</td>
</tr>
<tr>
<td>Year in College</td>
<td></td>
<td></td>
</tr>
<tr>
<td>First Year</td>
<td>38</td>
<td>57.6</td>
</tr>
<tr>
<td>Second Year</td>
<td>24</td>
<td>36.4</td>
</tr>
<tr>
<td>Third Year</td>
<td>1</td>
<td>1.5</td>
</tr>
<tr>
<td>Fourth Year</td>
<td>3</td>
<td>4.5</td>
</tr>
<tr>
<td>Number of Cigarettes Smoked Per Day</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 or fewer Cigarettes Per Day</td>
<td>30</td>
<td>45.5</td>
</tr>
<tr>
<td>6 - 10 Cigarettes Per Day</td>
<td>20</td>
<td>30.3</td>
</tr>
<tr>
<td>11 - 15 Cigarettes Per Day</td>
<td>5</td>
<td>7.6</td>
</tr>
<tr>
<td>16 - 20 Cigarettes Per Day</td>
<td>6</td>
<td>9.1</td>
</tr>
<tr>
<td>21 or More Cigarettes Per Day</td>
<td>5</td>
<td>7.6</td>
</tr>
<tr>
<td>Number of Cigarettes Smoked Within The Last 24 Hours</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 or fewer Cigarettes</td>
<td>32</td>
<td>48.5</td>
</tr>
<tr>
<td>6 - 10 Cigarettes</td>
<td>13</td>
<td>19.7</td>
</tr>
<tr>
<td>11 - 15 Cigarettes</td>
<td>8</td>
<td>12.1</td>
</tr>
<tr>
<td>16 - 20 Cigarettes</td>
<td>6</td>
<td>9.1</td>
</tr>
<tr>
<td>21 or More Cigarettes</td>
<td>7</td>
<td>10.6</td>
</tr>
<tr>
<td>Have Attempted to Quit Smoking</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>44</td>
<td>66.7</td>
</tr>
<tr>
<td>No</td>
<td>22</td>
<td>33.3</td>
</tr>
</tbody>
</table>
within student populations, their overall conclusion was that “[s]elf-reports of smoking are accurate in most studies” (Patrick et al., 1994, p. 1086).

Another study on the classification of smokers and non-smokers reported that individuals are more likely to underestimate how much they smoke (Wagenknecht et al., 1992). Hence, these researchers conclude that misclassification concerns are only applicable to non-smoking groups since light smokers are likely to report a non-smoking status. Since the present study used only smokers, this concern is irrelevant. The present study employed the smoker classification scheme used by Wagenknecht et al. (1992) which defines a smoker as any individual who reports smoking at least five cigarettes a week.

**Materials and Apparatus**

**Anti-Smoking Presentation**

Subjects viewed a videotaped presentation issued by Pyramid Film and Video entitled, *Dying for a Smoke* (William Riead Productions, 1994). This videotape lasts approximately 45 minutes and presents factual information about the health hazards of smoking, as well as case histories of smokers afflicted with chronic and terminal physical diseases. Criteria for selecting the anti-smoking media included: (a) explicit information about the health hazards of smoking, (b) case histories of smokers, and (c) at least one smoking character in the age range of 18 - 25 years old. The first criterion was selected to provide subjects with explicit facts concerning possible health hazards of smoking analogous to the messages used in the more assertive anti-smoking campaigns. The latter two criteria were suggested to “personalize” the anti-
smoking message by increasing the possibility that subjects would identify with one or more of the characters in the videotape. These selection criteria were suggested by a panel of approximately twenty undergraduate and graduate students that reviewed and critiqued anti-smoking videotapes during professional research meetings at the University of Dayton.

Measurement of Physiological Reactivity

Due to the problem of "individual response stereotypy" several physiological channels were assessed simultaneously to minimize confounds associated with individual differences regarding which physiological channels are most reactive during stress (Lacey, 1959). Thus, the following physiological modalities were monitored: heart rate (in beats per minute); neuromuscular frontallis activity (in microvolts); and skin conductance level (in microhos/microSiemens).

During the experimental condition, the physiological reactivity of subjects were monitored in two phases: (1) a 6-minute baseline interval; and (2) during the anti-smoking videotape presentation. Physiological reactivity of all channels were monitored continuously with averages calculated and recorded every two minutes during baseline and treatment conditions. As previously reviewed, researchers have used similar protocols to measure physiological reactivity within a videotape paradigm (e.g., Levenson and Mades, 1980).

Measurement of Subjective Emotionality

Subjects were asked to rate their subjective emotionality using Lang's (1980) Self-Assessment Mannikin (SAM; Appendix A) immediately after the videotape
presentation. The SAM consists of fifteen cartoon-like figures grouped according to three dimensions: (1) Pleasure, (2) Arousal, and (3) Dominance. Within each dimension, the participant must choose from one of five cartoon-figures that systematically vary in intensity. The Pleasure dimension ranged from “1” (displeasure) to “5” (pleasure). Likewise, the Arousal dimension ranged from “1” (low arousal) to “5” (high arousal). Finally, the Dominance dimension ranged from “1” (low dominance) to “5” (high dominance). The SAM was cross-validated with semantic assessment methods with correlations of .94, .92, and .68 reported for the pleasure, arousal, and dominance dimensions, respectively (Lang & Cuthbert, 1984). Regarding validity, research (e.g., Cuthbert & Lang, 1973; McNeil, Vrano, Melamed; Cuthbert, & Lang, 1993) has found the SAM dimensions to be valid measures of subjective emotionality to stress. After reviewing research utilizing this instrument, Lang and Cuthbert (1983, p. 382) concluded that the “SAM appears to be a reliable, relatively language-free methodology with which to assess affective reports of patients and other subjects.”

**Psychometric Measurement of Rationalizations about the Health Hazards of Smoking**

In their study, McMaster and Lee (1991) developed a Smoking Rationalization Scale (SRS) which included 22 rationalizations about cigarette smoking. In the present study, an abbreviated rationalization scale (ARS; Appendix B) was adopted from McMaster and Lee’s (1991) SRS scale. This adaptation of the SRS includes a total of nine true-false items that represented the most frequently endorsed rationalizations in McMaster and Lee’s (1991) previous study. McMaster
and Lee (1991) did not report specific reliability coefficients for this instrument. Regarding validity, these researchers obtained support for their hypothesis that smokers would endorse more rationalization items relative to ex-smokers and non-smokers.

Psychometric Measurement of Repression

The three coping styles were identified using the classification system developed by Weinberger et al. (1979) which employs the Marlowe-Crowne Scale and Bendig Short-Form of the Taylor Manifest Anxiety Scale (TMAS). Per Weinberger (personal communication, September 9, 1994), individuals were classified according to their scores on both of these measures as follows: (1) repressor (high Marlowe-Crowne and low TMAS); (2) low-anxious (low Marlowe-Crowne and low TMAS); (3) high-anxious (low Marlowe-Crowne and high TMAS); and (4) defensive high-anxious (high Marlowe-Crowne and high TMAS). Since Weinberger et al. (1979) suggest that defensive high-anxious individuals are rare, this group was excluded from the present study. The composition and psychometric properties of each of these scales, as well similar instruments employed in the study, are discussed below.

Marlowe-Crowne Scale. The Marlowe-Crowne Scale (Appendix C, Crowne & Marlowe, 1964) consists of 33 true-or-false items that were originally designed to detect social desirability (i.e., individuals who tend to respond in a socially desirable rather than honest or accurate fashion in order to achieve the approval of others). Subsequent research on the Marlowe-Crowne Scale indicated that the scale measures
"defensiveness and protection of self-esteem" (Crowne & Marlowe, 1964, p. 206) rather than social desirability, the construct it was originally created to detect. Good psychometric properties are evidenced. For example, within an adult sample internal consistency measured by the Kuder-Richardson formula 20 is reported at .88 (Crowne & Marlowe, 1960). Similarly, one-month test-retest correlations within a sample of college students was found to be .89 (Crowne & Marlowe, 1960). Regarding validity, Weinberger (e.g., Weinberger, et al., 1979) found that individuals who score high on the Marlowe-Crowne Scale and low on a trait anxiety scale tend to show evidence of repressive coping during stressful situations. High and low defensiveness was defined by the cut-off score of 16, as suggested by Weinberger (personal communication, September 9, 1994).

**Taylor Manifest Anxiety Scale.** The TMAS (Appendix D; Taylor, 1953) was constructed as a self-report measure to determine the intensity of anxiety experienced by individuals. Although the TMAS has several versions, this study employed the Bendig (1956) Short-Form version that consists of 20 anxiety-indicating items. This version is typically used in this area of research (e.g., Weinberger, 1990; Weinberger et al., 1979). Psychometric properties are reported to be sufficient. For example, a four-week test-retest Pearson product-moment correlation was reported at .88 in an undergraduate population (Taylor, 1953). Regarding validity, the TMAS, when used in conjunction with the Marlowe-Crowne scale, has been shown to successfully classify individuals who are more likely to employ repressive strategies in response to stress from those who are more likely to employ more adaptive coping strategies.
High and low trait anxiety was defined by scores above and below the cut-off score of 8, as suggested by Weinberger (personal communication, September 9, 1994).

**Marlowe-Crowne and Taylor Manifest Anxiety Composite.** The Marlowe-Crowne and Taylor Manifest Anxiety Composite (MC-TMAS Composite; Appendix E, see Davis & Schwartz, 1987) consists of the 33 items from the Marlowe-Crowne Scale and 20 items from the Bendig (1956) Short-Form of the TMAS. Each of the two scales in the MC-TMAS Composite are scored individually. Participants are given one point for each item scored in the pre-designated direction, using the same cut-offs of 16 for Marlowe-Crowne items and 8 for the Bendig (1956) Short-Form TMAS items. Using these criteria, participants were divided into the following groups: (1) repressor (high Marlowe-Crowne and low TMAS); (2) low-anxious (low Marlowe-Crowne and low TMAS); (3) high-anxious (low Marlowe-Crowne and high TMAS); and (4) defensive high-anxious (high Marlowe-Crowne and high TMAS).

**Demographic Questionnaire**

Participants completed a brief demographic questionnaire (Appendix F) constructed by the experimenter. This instrument consisted of items to assess the participant's age, sex, ethnicity, smoking status, and smoking history. In accordance with APA Ethical Guidelines (American Psychological Association, 1992), subjects were permitted to decline a response to any or all questions.

**Procedure**

Data collection began upon approval of the Research Review and Ethics Committee, Department of Psychology, University of Dayton. Additionally, all
procedures were in accordance with current American Psychological Association ethical guidelines (American Psychological Association, 1992).

Each participant was tested individually. After signing the informed consent form (Appendix G), participants completed the demographic questionnaire (Appendix F) and the Marlowe-Crowne-Taylor Manifest Anxiety Composite (Appendix E). Following a 6-minute baseline measurement, subjects viewed the Dying For A Smoke videotape while psychophysiological reactivity was continuously monitored with averages being recorded at two minute intervals. Immediately following the videotape presentation, participants completed the SAM (Appendix A) and ARS (Appendix B). Participants were then given a 5 minute break. Afterwards, participants completed two inventories associated with another research project. Finally, the subjects were debriefed (Appendix H). The total duration of this experiment was approximately 1 and 1/2 hours.

To assist in data analysis, an overall physiological reactivity score was calculated separately for each physiological channel measured (i.e., heart rate, frontallis muscle tension, and skin conductance level). First, each participants' average baseline measurement was calculated for a given channel. Second, an average during the anti-smoking presentation for the given channel was obtained. Third, an overall index of reactivity was obtained by subtracting the average baseline measurement from the average measurement during the videotape presentation for each channel with every participant. These transformed scores, which represent the degree to which a participant’s physiological reactivity increased or decreased in
comparision to their own baseline measurements, were employed in the statistical analyses.

Due to technical difficulties, physiological measurements of all channels were not possible for every participant. Heart rate measurements were missing for one low-anxious participant and two high-anxious participants. Measurements of frontallis muscle tension were unavailable for two participants in each of the three groups (e.g., repressor, low-anxious, and high-anxious). Likewise, skin conductance levels were missing for six participants. Of this group of six participants, one was in the repressor group, three were in the low-anxious group, and two were the high-anxious group.


CHAPTER III

RESULTS

Examination of Hypothesis 1

Hypothesis 1 stated that smokers who employ a repressive coping style would demonstrate a significantly greater level of physiological reactivity during the anti-smoking videotape relative to both low- and high-anxious smokers. A multivariate analysis of variance (MANOVA) was employed, with group (repressor vs. low-anxious vs. high-anxious) as the between-subjects factor. Dependent measures included heart rate, frontalis muscle tension, and skin conductance level during the anti-smoking videotape presentation. Table 2 presents means and standard deviations for physiological variables as a function of group. Table 3 presents means and standard deviations for the transformed physiological reactivity scores as a function of group. As previously mentioned, these transformed scores were employed in the data analysis. The overall MANOVA yielded significant results ($F(2,44) = 9.86, p = .001$). Pre-planned follow-up statistical analyses were conducted on each physiological channel, as discussed below.

Univariate analyses of variance (ANOVA) indicated significant group differences in heart rate during the anti-smoking presentation ($F(2,50) = 42.83, p = .001$). Subsequent analyses indicated that there was no significant group difference
<table>
<thead>
<tr>
<th>Group</th>
<th>High-Anxious</th>
<th>Low-Anxious</th>
<th>Repressor</th>
</tr>
</thead>
<tbody>
<tr>
<td>M</td>
<td>80.58</td>
<td>79.16</td>
<td>79.29</td>
</tr>
<tr>
<td>SD</td>
<td>3.61</td>
<td>7.26</td>
<td>8.27</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>M</th>
<th>SD</th>
<th>M</th>
<th>SD</th>
<th>M</th>
<th>SD</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Baseline</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heart Rate</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Skin Conductance Level</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frottatius Muscle Tension</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 2: Means and standard deviations of physiological levels at baseline and during the anti-smoking video tape presentation.
From the above physiological measurements during the anti-smoking video presentation for each participant, transformed data were calculated by subtracting the average baseline physiological measurements for each channel. For each channel, transformed data were calculated. The physiological data were transformed for each condition, and the data were then compared.

<table>
<thead>
<tr>
<th>Group</th>
<th>M</th>
<th>SD</th>
<th>M</th>
<th>SD</th>
<th>M</th>
<th>SD</th>
<th>M</th>
<th>SD</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skin Conductance Level</td>
<td></td>
<td></td>
<td>Frontalis Muscule Tension</td>
<td></td>
<td></td>
<td>Heart Rate</td>
<td></td>
<td></td>
<td>Mean &amp; Standard Deviations of Transformed Physiological Data</td>
<td></td>
</tr>
</tbody>
</table>
in heart rate between the repressor and high-anxious groups, \( t (30.08) = 0.95, p = .35 \). However, cigarette smokers who employ repressive coping strategies demonstrated significantly higher levels of heart rate reactivity than did low-anxious smokers, \( t (33) = 9.80, p = .001 \). Results also indicated that low-anxious smokers demonstrated significantly lower levels of heart rate reactivity than their high-anxious counterparts, \( t (29.78) = -7.03, p = .001 \).

Results on the ANOVA comparing groups on frontalis muscle tension reactivity were significant, \( F (2,47) = 12.95, p = .001 \). Pre-planned follow-up statistical analyses indicated that smokers in the repressor group demonstrated significantly higher levels of frontalis muscle tension than smokers in the high anxious group, \( t (30) = 2.86, p = .008 \). Differences in frontalis muscle tension were also significant when comparing the repressor and low-anxious groups, \( t (30) = 4.93, p = .001 \). Hence, smokers with a repressive coping style demonstrated higher levels of frontalis muscle reactivity during the anti-smoking videotape presentation than low-anxious smokers. In addition, cigarette smokers classified as low-anxious demonstrated significantly lower levels of frontalis muscle tension than smokers classified as high-anxious, \( t (34) = -2.28, p = .03 \).

Results of the ANOVA comparing groups on skin conductance level reactivity were significant, \( F (2,47) = 3.72, p = .03 \). However, pre-planned t-tests indicated that there was no significant difference in skin conductance level between the repressor and high-anxious groups, \( t (31) = -.84, p = .21 \), and the repressor and low-anxious groups, \( t (30) = 1.68, p = .11 \). However, cigarette smokers classified as low-
anxious demonstrated significantly lower skin conductance levels during the anti-smoking presentation than their high-anxious counterparts, $t(33) = -3.15$, $p = .003$.

In summary, these results provide limited support for Hypothesis 1. Overall, the physiological reactivity of smokers with a repressive coping style was significantly higher than that of high-anxious smokers on one of the three channels and was significantly higher than that of low-anxious smokers on two of the three channels.

Examination of Hypothesis 2

Hypothesis 2 stated that cigarette smokers classified as repressors would report significantly less subjective emotionality after watching an anti-smoking videotape presentation than either low-anxious or high-anxious cigarette smokers. This hypothesis was tested using a MANOVA, with group (repressors vs. low-anxious vs. high-anxious) as the between-subjects factor. The dependent measures included self-reported levels of pleasure, arousal, and dominance on the SAM inventory. Table 4 presents means and standard deviations for these dimensions of subjective emotionality as a function of group.

The overall MANOVA did not yield significant results, $F(2,53) = 1.49$, $p = .19$, suggesting that all participants responded similarly to SAM items regardless of their predominant coping style. Similarly, pre-planned follow-up univariate analyses did not yield significant differences among participants in self-reported levels of pleasure, $F(2,53) = 1.53$, $p = .23$, arousal, $F(2,53) = 0.85$, $p = .43$, and dominance, $F(2,53) = 2.08$, $p = .14$. Thus, the results fail to support Hypothesis 2.
Table 4

Means and Standard Deviations of Subjective Emotionality Data After Watching the Anti-Smoking Videotape Presentation

<table>
<thead>
<tr>
<th>Group</th>
<th>Pleasure</th>
<th>Dimension</th>
<th>Arousal</th>
<th>Dominance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>Repressor</td>
<td>3.75</td>
<td>0.68</td>
<td>2.44</td>
<td>0.73</td>
</tr>
<tr>
<td>Low-Anxious</td>
<td>3.55</td>
<td>0.59</td>
<td>2.50</td>
<td>1.05</td>
</tr>
<tr>
<td>High-Anxious</td>
<td>3.40</td>
<td>0.88</td>
<td>2.80</td>
<td>0.89</td>
</tr>
</tbody>
</table>

2 The Pleasure dimension was scored from “1” (displeasure) to “5” (pleasure).

3 The Arousal dimension was scored from “1” (low arousal) to “5” (high arousal).

4 The Dominance dimension was scored from “1” (low dominance) to “5” (high dominance).
Examination of Hypothesis 3

Hypothesis 3 stated that cigarette smokers who employed repressive coping skills would endorse significantly more statements that rationalize their smoking behavior in comparison to high-anxious or low-anxious smokers. In order to test this hypothesis, a one-way ANOVA was employed, with group (repressor vs. low-anxious vs. high-anxious) as the between-subjects factor, and the number of rationalizations endorsed on the ARS as the dependent variable. Table 5 presents the mean number of rationalizations endorsed and standard deviations for each group type.

Results indicated that there was no significant difference in the number of rationalizations endorsed among the groups, $F(2,53) = 0.10, p = .38$. Similarly, pre-planned follow-up statistical comparisons failed to yield significant differences in number of rationalizations endorsed when comparing cigarette smokers with a repressive coping style with high-anxious, $t(29.05) = -1.30, p = .21$, or low-anxious smokers, $t(29.03) = -1.00, p = .33$. Likewise, low-anxious and high-anxious smokers did not differ significantly in the number of rationalizations about cigarette smoking that they endorsed, $t(38) = -0.36, p = .74$.

In summary, these results do not support Hypothesis 3. These results suggest that all participants in the study, regardless of their predominant coping style, endorsed few rationalizations about cigarette smoking and responded similarly on the ARS. That is, ARS items may have limited utility in highlighting group differences concerning specific rationalizations about cigarette use.
Table 5

Means and Standard Deviations of Total Number of Smoking Rationalizations Endorsed After Watching the Anti-Smoking Videotape Presentation

<table>
<thead>
<tr>
<th>Group</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Repressor</td>
<td>1.25</td>
<td>1.61</td>
</tr>
<tr>
<td>Low-Anxious</td>
<td>1.75</td>
<td>1.33</td>
</tr>
<tr>
<td>High-Anxious</td>
<td>1.90</td>
<td>1.33</td>
</tr>
</tbody>
</table>
CHAPTER IV
DISCUSSION

In this section, the results corresponding to each hypothesis are discussed in separate sections. Within the context of this discussion, limitations of the present study and recommendations for future research are considered. Finally, a summary of the major findings and conclusions is presented.

Hypothesis 1

The first hypothesis stated that smokers who employ a repressive coping style would demonstrate significantly greater levels of physiological reactivity during the anti-smoking videotape presentation than would low- and high-anxious smokers. Results from this study provide limited support for Hypothesis 1. The data suggest that smokers with a repressive coping style (a) demonstrated higher levels of physiological reactivity on one of the three dependent measures when compared to high-anxious smokers, and (b) demonstrated higher levels of physiological reactivity on two of the three dependent measures when compared to low-anxious smokers.

It should be noted that the results of the present study are also consistent with some investigations that have compared the physiological reactivity of repressors and to that of high-anxious individuals. While several investigators (e.g., Jamner & Schwartz, 1985; Lazarus & Alfert, 1964; Scarpetti, 1973) suggest that repressors
exhibit *greater* physiological reactivity than their high-anxious counterparts, other researchers (e.g., Levenson & Mades, 1980; Weinberger et al., 1979) have been unable to replicate these findings. In a previous study, Weinberger et al. (1979) compared repressors and high-anxious participants on three measures of physiological reactivity: (a) heart rate; (b) electodermal reactivity; and (c) frontallis muscle tension. While this study reported that repressors demonstrated significantly higher levels of frontallis muscle tension when compared to the high-anxious group, no significant differences were obtained when comparing repressors and high-anxious participants on the other indices of physiological reactivity. Likewise, Levenson and Mades (1980) did not report significant differences on *any* measure of physiological reactivity when comparing repressor and high-anxious participants during a stressful “industrial accident” videotape presentation.

Thus, the literature on repressive coping has yielded inconsistent results regarding the relative physiological reactivity exhibited by repressors versus high-anxious subjects during stressors. Do repressors display *similar* levels of physiological reactivity during a stressor when compared to high-anxious individuals? In fact, this issue is reflected in Weinberger and Davidson’s (1994) characterization of repressors: “[Repressors] typically respond to stressful tasks that suggest that they are as anxious or more anxious than individuals reporting chronic distress [e.g., high-anxious individuals]” (p. 603). The results from the present study, though providing only limited support for Hypothesis 1, may also partially support an alternate hypothesis that repressors demonstrate similar levels of physiological reactivity when
compared to their high-anxious counterparts. Further research is needed to clarify this issue.

The results of the present study are also consistent with previous studies that have compared the physiological reactivity of repressors and low-anxious individuals. Several researchers (e.g., Shelder et al., 1993; Weinberger & Davidson, 1994; Weinberger et al., 1979) have consistently reported that repressors demonstrate significantly higher levels of physiological reactivity when compared to low-anxious participants. In addition, a review by Schwartz (1990) indicates that the difference in physiological reactivity between repressors and low-anxious individuals has been highly reliable and successfully replicated across several studies. Thus, data from the present study seem to concur with previous research to the extent that repressors demonstrated higher heart rates and greater levels of frontallis muscle tension when compared to low-anxious participants.

Contrary to Hypothesis 1, however, smokers classified as repressors did not demonstrate significantly higher levels of skin conductance than low-anxious participants. One explanation of this result concerns the problem of “individual response stereotypy,” i.e., individual differences regarding which physiological channels are most reactive during stress (Lacey, 1959). For this reason, major researchers in the field (e.g., Lang, 1980) suggest that several physiological channels are monitored to prevent mis-interpretation of the physiological reactivity among individuals with unusual response proclivities. It may be that the participants in this sample were more likely to respond via changes in heart rate and muscle tension
levels than by changes in skin conductance levels. Additional investigations are recommended to address this possible bias in physiological reactivity.

In addition, the results of the present study are consistent with previous studies that have compared the physiological reactivity of low-anxious and high-anxious individuals during stressful encounters. On all physiological channels, smokers in the low-anxious group demonstrated significantly lower levels of physiological reactivity than smokers in the high-anxious group. Similar results have been previously reported by several researchers (e.g., Jamner and Schwartz, 1990; Weinberger et al., 1979), suggesting that the results of the present study are in accordance with prior physiological investigations of low- and high-anxious individuals.

Hypothesis 2

The second hypothesis stated that cigarette smokers who employ repressive coping strategies would report significantly less subjective emotionality after watching an anti-smoking videotape presentation than either low-anxious or high-anxious smokers. Results from this study failed to support Hypothesis 2, suggesting that participants reported similar levels of subjective emotionality following the movie, regardless of their predominant coping style.

The results of the present study, though failing to support Hypothesis 2, are not necessarily inconsistent with previous studies on repressive coping. For example, an early study by Weinberger et al. (1979) also failed to achieve group differences on self-report measures of emotionality despite significant differences in physiological
reactivity and behavioral (verbal and nonverbal) avoidance among repressor, low-anxious, and high-anxious groups. Thus, a more sensitive instrument may be needed to measure differences in subjective emotionality between repressor and non-repressor groups. In support of this hypothesis, Weinberger (Personal communication, March 22, 1996) has suggested that self-report subjective-distress instruments used in studies that investigate repressive coping require: (a) a rating format, and (b) items to assess several indicators of emotionality. For example, Weinberger and Davidson (1994) demonstrated significant differences in self-reported emotionality between repressors and non-repressors by using a 7-point Likert scale in which participants rated the degree to which they felt anxious, sad, angry, guilty, fearful, surprised, embarrassed, frustrated, happy, and calm. Several major researchers in the area of emotions (e.g., Lang and Cuthbert, 1984) highly recommend using the SAM for measuring subjective emotionality in various experimental paradigms (e.g., Lang, personal communication, May 3, 1996; McNeil, Vrano, Melamed, Cuthbert, & Lang, 1993); however, the SAM has never been used in attempts to detect differences in subjective emotionality among individuals with various coping styles (e.g., repressor vs. high-anxious vs. low-anxious) as they undergo psychological stressors. Future research is necessary to determine which instruments are most effective in demonstrating significant differences in self-reported emotionality between repressor and non-repressor groups.

Another possible limitation to the SAM may be the type of administration employed in the present study. Unlike some past studies (e.g., Lang and Cuthbert,
1984), which employed a computer-driven administration, the present study employed a pencil-and-paper administration of the SAM. Further research is needed to determine if the type of administration -- computer or manual -- significantly impacts measurement of self-reported levels of subjective emotionality on the SAM.

**Hypothesis 3**

The third hypothesis stated that smokers who employ repressive coping skills would endorse significantly more statements that rationalize smoking behavior than low- or high-anxious smokers. Results from this study failed to support Hypothesis 3; participants endorsed few and equal numbers of rationalizations about cigarette smoking following the videotape presentation, regardless of their predominant coping style.

One possible interpretation of these results is that the ARS, like the SAM, lacked sufficient sensitivity to detect differences in the ability to rationalize cigarette smoking among repressors, low-anxious, and high-anxious smokers. Analysis of the overall response pattern on the ARS suggest that all participants endorsed relatively few rationalizations about cigarette smoking (\( M = 1.66; \ SD = 1.42; \ Range = 0 - 6 \)). Thus, the ARS may be too limited in its scope to differentiate repressor from non-repressor smokers. Moreover, although the ARS has been used in previous studies on cigarette smoking (McMaster & Lee, 1991), it has never been used in experiments investigating repressive coping.

Exploratory analyses revealed that smokers with a repressive coping style were much more likely (\( X^2 = 4.00; p = .05 \)) to endorse one ARS item (i.e., “Smokers
can totally reverse damage to their health by deciding to give up smoking") than were high-anxious ($X^2 = .20; p = .65$) or low-anxious ($X^2 = .20; p = .65$) smokers. This finding represents the only clear group difference on ARS items, as most subjects endorsed relatively few ARS items. Because this analysis was purely exploratory in nature, and it was conducted only for the purpose of generating hypotheses, the results need to be interpreted with extreme caution. Nevertheless, one potential hypothesis is that smokers with a repressive coping style have a tendency to exaggerate the extent to which smoking-related physiological changes can be simply reversed. Perhaps a self-report scale that focuses more on this (and related) issues would reflect important differences between repressors and non-repressors.

Another limitation is a possible demand characteristic confound inherent in the procedural aspect of the study. Since all participants completed the ARS after seeing the anti-smoking videotape presentation, their responses may have been primarily influenced by the presentation and may not reflect their typical beliefs about cigarette smoking. A more appropriate procedure would be to administer an instrument such as the ARS both before and after the participant is exposed to anti-smoking media. This technique has two benefits: (1) data on each participant’s tendency to rationalize cigarette smoking behavior, unaffected by recent exposure to anti-smoking information, would be available; and (2) differences in pre- and post-test response patterns could be analyzed to evaluate the impact of the anti-smoking presentation on the participant’s belief systems.
The results of this study may be limited in the extent to which they can be generalized to other populations. This may be particularly true regarding the results from the ARS, which were derived from a scale originally used within a culturally different population (i.e., administrative staff at a large firm and college students, both from Australia). Similarly, since all participants were attending the University of Dayton, results from this study may not accurately describe smokers from a non-student population. Analysis of the Demographic Questionnaire indicated that most participants described their ethnic background as White/Caucasian. In addition, there were significantly more females in the sample than males ($X^2 = 3.88; p = .05$). Future research using different populations is suggested to evaluate the extent to which the present study is externally valid despite the inherent biases in the participant sample.

**Summary and Conclusions**

This study investigated the possible role of repressive coping in the maintenance of cigarette smoking. Since repression has been empirically demonstrated as a means by which an individual can avoid conscious knowledge of a noxious stimuli (Weinberger, 1990), it was hypothesized that cigarette smokers who employ repressive coping mechanisms would: (a) demonstrate higher levels of physiological reactivity; (b) report less subjective distress; and (c) endorse more rationalizations about cigarette smoking after being presented with anti-smoking information than smokers who use more adaptive coping strategies. Sixty-six university undergraduates who each reported smoking at least five cigarettes per
week participated in the study. Participants were classified according to their predominant coping styles using Weinberger et al.'s (1979) classification system.

Following a baseline measurement, participants viewed a 45 minute anti-smoking videotape presentation while three channels of physiological reactivity were recorded: (a) frontalis muscle tension; (b) heart rate; (c) skin conductance level.

Afterwards, participants completed inventories that assessed subjective emotionality and rationalizations about cigarette smoking. The physiological reactivity of smokers with a repressive coping style was significantly higher than that of high-anxious smokers on one of the three measures and significantly higher than that of low-anxious smokers on two of the three measures. Contrary to what was hypothesized, smokers reported similar levels of subjective emotionality and endorsed relatively few rationalizations about cigarette smoking, regardless of their predominant coping style. Although this study revealed some significant differences in physiological reactivity among the groups, the results do not provide extensive support for the role of repressive coping in the maintenance of cigarette smoking for some individuals. However, additional investigations using different measures of subjective emotionality and rationalizations about cigarette smoking are recommended. It is also suggested that future investigations examine if there are any differences in the prevalence of repressive and non-repressive coping styles among smokers and non-smokers. Likewise, it is recommended that future studies compare the reactions of smokers versus non-smokers during anti-smoking media presentations.
Appendix A

Self-Assessment Mannikin

Please circle ONE figure in each row that BEST describes how you felt during the videotape presentation.

**PLEASURE**

**AROUSAL**

**DOMINANCE**

---

5 The Self-Assessment Mannikin was scored as follows: The Pleasure dimension was scored from “1” (displeasure, far right) to “5” (pleasure, far left). The Arousal dimension was scored from “1” (low arousal, far right) to “5” (high arousal, far left). The Dominance dimension was scored from “1” (low dominance, far left) to “5” (high dominance, far right).
Appendix B

Abbreviated Rationalization Scale

Instructions:

Please circle T (true) or F (false) for each of the following items.

1. T  F  Smokers can usually tell if they are being harmed by cigarettes.

2. T  F  Most illnesses caused by smoking can be cured if caught early enough.

3. T  F  Someone who has truly given up smoking can have one cigarette and not get hooked again.

4. T  F  Smokers can totally reverse damage to their health by deciding to give up smoking.

5. T  F  Links between smoking and chronic bronchitis have not been established fully.

6. T  F  Life is too short to worry about such things as the harmful effects of smoking.

7. T  F  Antismoking advertisements overemphasize the real dangers.

8. T  F  Smoking is not as harmful as drinking alcohol.

9. T  F  Smoking is less of a danger than other risks, such as the risk of a car accident.
Appendix C

Marlowe-Crowne Scale

Instructions:

Please circle T (true) or F (false) for each of the following items.

1. T  F  Before voting I thoroughly investigate the qualifications of all the candidates.
2. T  F  I never hesitate to go out of my way to help someone in trouble.
3. T  F  It is sometimes hard for me to go on with my work if I am not encouraged.
4. T  F  I have never intensely disliked anyone.
5. T  F  On occasion, I have had doubts about my ability to succeed in life.
6. T  F  I sometimes feel resentful when I don’t get my way.
7. T  F  I am always careful about my manner of dress.
8. T  F  My table manners at home are as good as when I eat out in a restaurant.
9. T  F  If I could get into a movie without paying for it and be sure I was not seen, I would probably do it.
10. T  F  On a few occasions, I have given up doing something because I thought too little of my ability.
11. T  F  I like to gossip at times.
12. T  F  There have been times when I felt like rebelling against people in authority even though I knew they were right.
13. T  F  No matter who I’m talking to, I’m always a good listener.
14. T  F  I can remember “playing sick” to get out of something.
15. T  F  There have been occasions when I took advantage of someone.
16. T  F  I’m always willing to admit it when I make a mistake.
17. T  F  I always try to practice what I preach.
18. T  F  I don’t find it particularly difficult to get along with loudmouthed, obnoxious people.
19. T  F  I sometimes try to get even, rather than forgive and forget.
20. T  F  When I don’t know something, I don’t at all mind admitting it.
21. T  F  I am always courteous, even to people who are disagreeable.
<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>22.</td>
<td>T</td>
<td>F</td>
</tr>
<tr>
<td>23.</td>
<td>T</td>
<td>F</td>
</tr>
<tr>
<td>24.</td>
<td>T</td>
<td>F</td>
</tr>
<tr>
<td>25.</td>
<td>T</td>
<td>F</td>
</tr>
<tr>
<td>26.</td>
<td>T</td>
<td>F</td>
</tr>
<tr>
<td>27.</td>
<td>T</td>
<td>F</td>
</tr>
<tr>
<td>28.</td>
<td>T</td>
<td>F</td>
</tr>
<tr>
<td>29.</td>
<td>T</td>
<td>F</td>
</tr>
<tr>
<td>30.</td>
<td>T</td>
<td>F</td>
</tr>
<tr>
<td>31.</td>
<td>T</td>
<td>F</td>
</tr>
<tr>
<td>32.</td>
<td>T</td>
<td>F</td>
</tr>
<tr>
<td>33.</td>
<td>T</td>
<td>F</td>
</tr>
</tbody>
</table>
Appendix D

Taylor Manifest Anxiety Scale

Instructions:

Please circle T (true) or F (false) for each of the following items.

1. T  F  I believe I am no more nervous than most others.
2. T  F  I work under a great deal of tension.
3. T  F  I cannot keep my mind on one thing.
4. T  F  I am more sensitive than most other people.
5. T  F  I frequently find myself worrying about something.
6. T  F  I am usually calm and not easily upset.
7. T  F  I feel anxiety about something or someone almost all the time.
8. T  F  I am happy most of the time.
9. T  F  I have periods of such great restlessness that I cannot sit long in a chair.
10. T  F  I have sometimes felt that difficulties were piling up so high that I could not overcome them.
11. T  F  I find it hard to keep my mind on a task or job.
12. T  F  I am not unusually self-conscious.
13. T  F  I am inclined to take things hard.
14. T  F  Life is a strain for me much of the time.
15. T  F  At times I think I am no good at all.
16. T  F  I am certainly lacking in self-confidence.
17. T  F  I do not tire quickly.
18. T  F  I have very few headaches.
19. T  F  I frequently notice my hand shakes when I try to do something.
20. T  F  I worry quite a bit over possible misfortunes.
21. T  F  I am very seldom troubled by constipation.
22. T  F  I have a great deal of stomach trouble.
23. T  F  I have had periods in which I lost sleep over worry.
24. T  F  My sleep is fitful and disturbed.
25. T  F  I wish I could be as happy as others seem to be.
26. T  F  I cry easily.
27. T  F  It makes me nervous to have to wait.
28. T  F  I have been afraid of things or people that I know could not hurt me.
29. T  F  I certainly feel useless at times.
30. T  F  I am a high-strung person.
31. T  F  I sometimes feel that I am about to go to pieces.
32. T  F  I shrink from facing a crisis or difficulty.
33. T  F  I am entirely self-confident.
34. T  F  I am troubled by attacks of nausea.
35. T  F  I worry over money and business.
36. T  F  I blush no more often than others.
37. T  F  I have diarrhea once a month.
38. T  F  I practically never blush.
39. T  F  I am often afraid that I am going to blush.
40. T  F  I have nightmares every few nights.
41. T  F  My hands and feet are usually warm enough.
42. T  F  I sweat very easily even on cool days.
43. T  F  Sometimes when embarrassed, I break out in a sweat which annoys me greatly.
44. T  F  I hardly ever notice my heart pounding and I am seldom short of breath.
45. T  F  I feel hungry almost all the time.
46. T  F  I dream frequently about things that are best kept to myself.
47. T  F  I am easily embarrassed.
48. T  F  I sometimes become so excited that I find it hard to get to sleep.
49. T  F  I must admit that I have at times been worried beyond reason over something that really did not matter.
50. T  F  I have very few fears compared to my friends.
Appendix E

Marlowe-Crowne and Taylor Manifest Anxiety Composite

Instructions:

Please read each statement and decide whether you feel in general that it is mostly true (T) when applied to you or mostly false (F). Then circle your answer next to the statement. Answer “True” to positively stated questions if they are true as often or more often than stated. For example, answer “True” to “Occasionally, I play poker” if you play occasionally or more often.

1. T F  I find it hard to keep my mind on a task or job.
2. T F  I am sometimes irritated by people who ask favors of me.
3. T F  I am happy most of the time.
4. T F  Before voting I thoroughly investigate the qualifications of all the candidates.
5. T F  I believe I am no more nervous than most others.
6. T F  I sometimes think when people have a misfortune they only got what they deserved.
7. T F  I am more sensitive than most other people.
8. T F  I like to gossip at times.
9. T F  On occasion, I have had doubts about my ability to succeed in life.
10. T F  There have been occasions when I took advantage of someone.
11. T F  I am a high-strung person.
12. T F  I have never intensely disliked anyone.
13. T F  I cannot keep my mind on one thing.
14. T F  I never make a long trip without checking the safety of my car.
15. T F  I have periods of such great restlessness than I cannot sit long in a chair.
16. T F  I am always courteous, even to people who are disagreeable.
17. T F  On a few occasions, I have given up doing something because I thought too little of my ability.
18. T F  I am always careful about my manner of dress.
19. T F  At times I think I am no good at all.
20. T F  I have never felt that I was punished without cause.
21. T F  When I don’t know something I don’t mind at all admitting it.
Appendix E (continued)

22. T F  I am usually calm and not easily upset.
23. T F  I never resent being asked to return a favor.
24. T F  I am not unusually self-conscious.
25. T F  I sometimes try to get even, rather than forgive and forget.
26. T F  If I could get into a movie without paying and be sure I was not seen, I would probably do it.
27. T F  I work under a great deal of tension.
28. T F  I have never deliberately said something that hurt someone’s feelings.
29. T F  I can remember “playing sick” to get out of something.
30. T F  I am inclined to take things hard.
31. T F  I sometimes feel resentful when I don’t get my way.
32. T F  Life is a strain for me much of the time.
33. T F  No matter who I’m talking to, I’m always a good listener.
34. T F  I certainly feel useless at times.
35. T F  I always try to practice what I preach.
36. T F  There have been times when I was quite jealous of the good fortune of others.
37. T F  I sometimes feel that I am about to go to pieces.
38. T F  I have never been irked when people expressed ideas very different from my own.
39. T F  My table manners at home are as good as when I eat out in a restaurant.
40. T F  There have been occasions when I felt like smashing things.
41. T F  I have sometimes felt that difficulties were piling up so high that I could not overcome them.
42. T F  I never hesitate to go out of my way to help someone in trouble.
43. T F  It is sometimes hard for me to go on with my work if I am not encouraged.
44. T F  At times I have really insisted on having things my own way.
45. T F  I feel anxiety about something or someone almost all the time.
46. T F  I’m always willing to admit it when I make a mistake.
47. T F  There have been times when I felt like rebelling against people in authority even though I knew they were right.
48. T F  I frequently find myself worrying about something.
49. T F  I have almost never felt the urge to tell someone off.
50. T F  I shrink from facing a crisis or difficulty.
51. T F  I don’t find it particularly difficult to get along with loudmouthed, obnoxious people.
52. T F  I am certainly lacking in self-confidence.
53. T F  I would never think of letting someone else be punished for my wrongdoings.
Appendix F

Demographic Information Questionnaire

1. What is your age?
   A. 18 years old   B. 19 years old   C. 20 years old
   D. 21 years old   E. 22 years old   F. Other: ____________

2. What is your gender?
   A. Male       B. Female

3. What is your race?
   A. White/Caucasian   B. African-American   C. Latin-American
   D. Other: ____________   E. Prefer not to indicate

4. What is your current year in college?
   A. First year     B. Second year     C. Third year
   D. Fourth year    E. Fifth year     F. Graduate student

5. On the average, do you smoke at least five cigarettes a week?
   A. Yes         B. No

6. How old were you when you started smoking? ____________

7. Typically, how many cigarettes have you smoked a day?
   A. 0-5 cigarettes   B. 6-10 cigarettes   C. 11-15 cigarettes
   D. 16-20 cigarettes   E. 21 or more cigarettes

8. Approximately how many cigarettes have you smoked within the last twenty-four hours?
   A. 0-5 cigarettes   B. 6-10 cigarettes   C. 11-15 cigarettes
   D. 16-20 cigarettes   E. 21 or more cigarettes

9. Have you tried to quit smoking?
   A. Yes*           B. No
   * If you answered yes, how many times have you tried to quit?
Appendix F (continued)

10. If you have ever attempted to quit smoking, what was the longest time that you were able to go without a cigarette? _____________________________
Appendix G

Informed Consent to Participate As a Research Subject

During this study, physiological reactivity will be monitored during a videotaped presentation of the health hazards associated with cigarette smoking. The presentation will include information about smoking and personal accounts by smokers. Although the information on the videotape candidly discusses the health concerns associated with cigarette smoking, no discomfort or distress is associated with watching the videotape presentation. Moreover, this presentation is suggested for general audiences.

The physiological measurements that will be employed are non-intrusive and involves attaching two velcro strips around the fingers and one sensor to the forehead. State-of-the-art equipment is used to assess physiological reactivity and no pain or distress is associated with these measures. Before the videotape, you will asked to complete two questionnaires. Then, there will be a 5 minute break before completing the remaining self-report inventories.

Throughout the study, your identity will be kept confidential. For instance, all information will be stored in a secure location and labeled with identification numbers instead of names. In addition, this sheet (which is the only form that contains your name) is separated from the questionnaires to insure that your responses are kept confidential.

Your participation is voluntary. At any time, you may terminate participation and still receive full credit for the research experiment.

In total, this experiment is expected to last approximately 1 1/2 hours.

Following participation, you will be debriefed on an individual basis to facilitate your understanding of the study.

If you have additional questions about this study, please feel free to contact the principal investigator, Lisa M. Frantsve, at 229-2175 or the faculty sponsor, Dr. Roger N. Reeb, at 229-2395.
I, ________________________________, voluntarily decided to participate in this experiment. I have read the conditions of this informed consent form and have had any additional questions answered by the investigator. I also certify that I am at least 18 years of age.

__________________________________________________________
Signature of Subject

__________________________
Date

__________________________________________________________
Signature of Witness

__________________________
Date
Appendix H

Debriefing Form

Thank you for your participation in this study on smokers’ responses to anti-smoking messages. The purpose of this study is to determine how smokers with different coping styles react to the anti-smoking campaign.

The main hypothesis investigates if smokers who employ repressive coping methods are less likely to gain the full impact of anti-smoking messages than smokers who employ other coping methods. Specifically, this study investigates if smokers with different coping styles (1) demonstrate different levels of physiological reactivity during an anti-smoking movie, (2) report different levels of emotional arousal after watching an anti-smoking movie, and (3) report different beliefs about the health hazards associated with cigarette smoking.

If you have would like to read more about this area of research, a few key references are listed below.

Please feel free to contact the principal investigator, Lisa M. Frantsve, at 229-2175 or the faculty sponsor, Dr. Roger N. Reeb, at 229-2395 if you have additional questions about this study. Or, if you have experienced any distress from participating in this experiment, please contact the counseling center at 229-3141.

Thank you for your time and effort in this study!

References:


REFERENCES


William Riead Productions (Producer) & William Riead (Director). (1994). *Dying for a smoke* [Film]. (Available from Pyramid Film and Video, 2801 Colorado Avenue, Santa Monica, CA 90404).