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Differences in Value Expectancy and Outcome Expectation Regarding Weight Gain Among Participants in an Air Force Tobacco Cessation Program

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DIFFERENCES IN VALUE EXPECTANCY AND OUTCOME EXPECTATION
REGARDING WEIGHT GAIN AMONG PARTICIPANTS IN AN AIR FORCE
TOBACCO CESSATION PROGRAM

A Thesis

Presented to the

School of Health, Physical Education and Recreation

And the

Faculty of the Graduate College

University of Nebraska

In Partial Fulfillment

Of the Requirements for the Degree

Master of Science

University of Nebraska at Omaha

By

James E. Reineke

May 2001

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THESIS ACCEPTANCE

Acceptance for the faculty of the Graduate College,
University of Nebraska, in partial fulfillment of the
Requirements for the degree of Master of Science,
University of Nebraska at Omaha.

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April 13, 2001

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REGARDING WEIGHT GAIN AMONG PARTICIPANTS IN AN AIR FORCE
TOBACCO CESSATION PROGRAM

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University of Nebraska, 2001

Advisor: Dr. Richard Stacy

ABSTRACT

The impact of tobacco has been one of the greatest public health concerns of the last quarter century, and while advances have been made, a significant percentage of Americans continues to smoke. One reason which tobacco users cite for continuing this negative health habit is the desire to maintain their current weight, or the fear of weight gain following tobacco cessation. While there may be negative consequences (real and perceived) to weight gain in the general population, definite sanctions exist in the United States military for those who gain weight in excess of their maximum allowable weight. Tobacco cessation classes (TCC) are available at most military locations for all eligible beneficiaries (i.e., active duty, civilian employees, dependents, retirees, etc.)

The purpose of this study was to determine if differences exist in the value expectancy and outcome expectation regarding weight gain among participants in an Air Force tobacco cessation program; these differences were examined in relation to different "status" (i.e., active duty, dependent, etc.) within the eligible population. To examine these constructs, surveys returned by 37 eligible Air Force beneficiaries who registered for TCC at the Offutt Air Force Base, Nebraska Health and Wellness Center were

evaluated. Surveys contained general demographic information, as well as 32 questions related to value expectancy and outcome expectation; specific areas of the survey were related to values and expectations in three different areas: 1) health, 2) social and 3) career. Participant responses for questions concerning each of these areas were tabulated to obtain a mean score for each construct. The mean score for each area was compared between active duty members and others (i.e., civilians, dependents, retired). No significant differences were found in the scores between these two groups using independent t-tests comparing the health, social and career value expectancies ($p < .01$); a two-tailed test was used.

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CHAPTER 1

Introduction

The United States Air Force (USAF) has targeted tobacco use as one of its primary components in its battle to improve the health of its active duty fighting force , as well as a major factor in improving the overall health of all military beneficiaries (i.e., dependents, retirees, reservists, and other U.S. military service components). Tobacco cessation programs are available to all beneficiaries at Offutt Air Force Base, Nebraska through programs offered by the Health & Wellness Center in a 4-week program (day or evening) based upon the FreshStart program from the American Cancer Society.

The use of tobacco products in today's society is one of the leading health risks for Americans. "Cigarette smoking is the most important preventable cause of death in our society. It is responsible for approximately 390,000 deaths each year in the United States (USDHHS, 1990)". Bushnell et al. (1997) note that "tobacco use is the single most important cause of death in military personnel" (p. 715). Current literature estimates of tobacco use generally note that approximately 26% of Americans continue to smoke (USDHHS, 1999), even though the risks of tobacco use and the impact on overall health are well documented.

The prevalence of tobacco use in the Air Force population is similar to that of the general (or civilian) population. One recent study noted that despite initiatives to limit smoking (i.e., no smoking areas, no cost nicotine replacement therapy, smoking cessation programs, etc.), "22.4% of active duty Air Force members continue to smoke" (Robbins & Miller, 1998, p. 594). Smoking in adults has declined from 53% in 1966 to 23% in

1997 (Centers for Disease Control [CDC], 1998), however the decrease in the prevalence of this negative health habit has stalled in recent years. The need to decrease the number of smokers has not only been a focus of government health entities and reports (i.e., CDC Office on Smoking and Health, the Department of Health & Human Services Healthy People 2010 Report), but also a primary goal of the United States Air Force (Air Force Tobacco Reduction Plan, 1992) Even as early as 1986, military health professionals were calling for increased efforts to impact smoking rates due to the health risk they imposed on individuals not only during their active duty commitment, but also for years after in continued medical need (Enzenauer, 1986). Tobacco use (and more specifically smoking) has been seen as a primary target in the battle to improve overall health of the population, and thereby make an impact on controlling health costs both in the general population and the USAF.

While smoking and tobacco reduction in the Air Force is certainly a primary health (and economic) goal for the USAF Medical Service, the consequences of smoking behavior for the individual member are primarily health related (i.e., respiratory illness, decreased lung function, etc.) as the member incurs limited monetary expense as a result of decreased overall health (as a benefit of active duty status). However, a common outcome for individuals in smoking cessation programs is weight gain. Current literature notes that nearly 80 % of individuals in smoking cessation programs gain weight subsequent to quitting (Klesges & Shumaker, 1992; Varner, 1999). A recent study of a military population enrolled in smoking cessation at Lakenheath AB, UK revealed similar results (Peterson & Helton, 2000).

Smoking, smoking cessation and their influence on weight have a potentially more significant impact on the active duty Air Force member (compared with the general population) due to the need of the individual to maintain service-specific weight and body fat standards. The Air Force does not have a policy that forbids smoking by active duty members, except during formal training (Air Force Instruction 40-102, dtd 1 August 1998). Although the goal of the Air Force is to decrease the number of smokers (and tobacco users), smokers are not subject to administrative or disciplinary action as a result of continuing this behavior. Conversely, individuals who exceed weight standards are subject to such actions that could ultimately result in discharge from the Air Force, even though tobacco use represents a far greater health risk than short-term moderate weight gain. These potential negative consequences (i.e., administrative action and/or discharge) though, are only explicitly concerns for the active duty member; other smokers (such as retirees or dependents) are not subject to such actions and as such may have differing views/values regarding any potential weight gain.

Tobacco cessation courses (TCC) are offered at many Air Force installations, and attendance at these “support groups” is required for individuals who desire the use of drug therapy (e.g., nicotine replacement therapy or Zyban) in their cessation attempt. As a benefit of attendance at these facilitated support meetings (as a component of their tobacco cessation program), the Air Force provides one drug therapy at no cost to the individual; this benefit is available to all eligible beneficiaries (e.g., active duty, dependents, retired members, etc.). Consequently, TCC programs generally include individuals from varying groups within the eligible population.

The potential for weight gain following tobacco cessation is consistent across all of the groups of individuals who participate in TCC programs, however there may be differences in the perceived “value” of any weight gain (e.g., health, social and career consequences) as well as the perceived or expected outcomes associated with post-cessation weight gain. As previously noted, only the active duty member is explicitly affected by weight standards, as such his/her perceptions of any weight gain may be different than other groups in the TCC program. In addition, there may be different perceived values and outcome expectations related to weight gain in the health and social arenas also. The tenants of Social Cognitive Theory (Glanz, Lewis & Rimer, 1997) were examined as they related to the interaction of the TCC members perceptions of these outcomes and values.

Purpose

The purpose of this investigation will be to assess the differences in outcome expectation and value expectancy related to weight gain among participants in an Air Force tobacco cessation program. The differences in these constructs among the participants will be examined by comparing the responses of active duty members versus “others” (e.g., dependents, retirees, etc.). Specifically, do active duty members have a greater perceived value expectancy and outcome expectation than others due to the potential negative consequences of weight gain?

Outcome expectations are the expected outcomes which will result from a behavior change, while the value expectancy is the importance the individual attaches to each outcome (Baranowski, Perry & Parcel, 1997). Outcome expectations and value

expectancy will be compared in three different areas: 1) health, 2) social and 3) career perceptions. The groups will include (1) active duty military members, and (2) other members such as dependents, civilian employees, retired members, etc.

Additionally, TCC members may include members of any service, however the overwhelming majority of active duty participants are Air Force. Given this fact (and the similarity in standards from other services), Air Force height and weight standards will be used in reviewing study data.

Research Questions

The following questions will be addressed in the context of this study:

1. Is perceived outcome expectation statistically different among groups within the sample?
 - 1a. Is perceived outcome expectation for health concerns different among groups?
 - 1b. Is perceived outcome expectation for social concerns different among groups?
 - 1c. Is perceived outcome expectation for career concerns different among groups?
2. Is perceived value expectancy statistically different among all groups within the sample?
 - 2a. Is perceived value expectancy for health outcome different among groups?

2b. Is perceived value expectancy for social concerns different among groups?

2c. Is perceived value expectancy for career concerns different among the groups?

Assumptions

Weight change/gain has been investigated extensively in the literature related to smoking cessation, and it is assumed that the weight changes in this population will be similar to that of other subjects who have participated in smoking cessation programs (Peterson & Helton, 2000). It is also assumed that the participants in the smoking cessation program have some degree of personal desire to stop smoking as evidenced by their voluntary participation in the program. Another assumption of this study is that weight gain has some perceived negative consequences for all participants.

The research population will include all participants in the Offutt Air Force Base smoking cessation program who voluntarily submit to be included within the study; it is assumed that this group will be made up of a diverse group of smokers, similar to the general population. This research population will be further divided by group membership as previously noted, active duty members versus others.

Delimitations

Only individuals who are eligible beneficiaries for services were potential participants in this research study. As such, recommendations from this research will be applicable to this group, or those of similar background (e.g., active duty military, dependent, retired member, etc.). Study participants were individuals who registered for

the tobacco cessation courses at the Offutt Air Force Base, Nebraska Health and Wellness Center; this includes registrants in the January – March 2001 classes and those individuals making TCC follow-up visits during the same time frame (attended last class of 2000).

Limitations

Several limitations may potentially have an influence on this investigation. The sample for this investigation will be comprised of a convenience, self-selected sample based upon their voluntary enrollment into a smoking cessation program. Those who attend the TCC program may have been inherently more concerned with health factors (such as weight) as it related to their current tobacco habit and its consequences.

Small sample size for any particular group within the overall cessation program population may occur due to the convenience sampling and response bias. While this limitation may have an impact on study results, this specific population (and sample) will be used in order to ensure that all study participants have identical programming opportunities for enrollment, support, and adjunct education (e.g., exposure to facilitator, TCC program component consistency, etc.).

The short duration of the study is an anticipated limitation. A small “window” for return of surveys may limit the overall number of respondents; this prompt response is desired in order to get a “snapshot” of current perceptions regarding these constructs, as well as to minimize the impact of the transient nature of active duty members (e.g., temporary duty out of the area, permanent change of station, separation or retirement).

Subject honesty in completing of the survey instrument is a limitation of this investigation. Participants will be ensured that the information they provide will be kept confidential, and will not be forwarded for any administrative actions based on this study. The survey instrument was offered to each TCC participant who chose to respond on a completely voluntary basis. Surveys were offered outside of the formal TCC program and included a cover letter explaining the purpose of the study. No information provided by the respondent was specifically linked to an individual (e.g., no names, social security numbers, etc.). In addition, no individual results were reported. Aggregate results were provided, upon request, to maintain individual respondent confidentiality.

A response bias may occur if not all participants of the cessation program volunteer to participate as subjects within the investigation, if self-selected individuals completing survey instruments provide incomplete information, or if a low response rate occurs. All participants were offered the opportunity to be included in the investigation, but inclusion is strictly voluntary. A thorough explanation of all survey instruments was included, and the researcher was readily available to answer all questions, as needed. In addition, stamped self-addressed envelopes were provided for all potential participants.

Subject attrition (due to permanent change of station, temporary duty out of the area, TCC drop-out, medical issues, etc.) during the program may occur, however responses of these members had the potential to be included if they could be contacted. Smoking cessation was not the goal/purpose of this investigation; rather the behaviors associated with it and therefore whether the individuals quit smoking or not was not a limitation of this investigation.

The survey instrument was another potential limitation of this research. The instrument was pilot tested in a similar population, as well as being reviewed by other experts in the health and education fields to minimize or eliminate possible problems associated with the tool. Modifications to the survey instrument were made to clarify “group” membership within the sample, and to ensure that questions were not ambiguous.

Significance of the Study

Smoking (and tobacco use) contribute significantly to the morbidity and mortality of Americans; both the U.S. government health agencies and the United States Air Force have identified the need to decrease the number of smokers in order to have a positive impact on the health status of their populations. However, the very real potential for weight gain following smoking cessation for the active duty military member may play a role in the decision of the individual to attempt cessation.

Also, the smoking cessation programs offered at Air Force facilities are available to all eligible beneficiaries to include active duty members, reservists, their dependents, and other government employees (i.e., civilian employees). The cessation programs attempt to support all of the participants in the same manner in regards to the “desire to quit”, though only the active members (to include reservists) are subject to administrative action if weight gain exceeds a certain level (i.e., exceeds standard for maximum allowable weight).

The results of this investigation will reveal the potential differences (or similarities) between two groups within the participant population. These issues can be used to identify possible changes to the process that the Air Force employs to combat this

issue within their smoking population. Do different interventions need to be used for different groups all attending the same smoking cessation program based upon their perceived value expectancy and outcome expectation? Should the USAF provide a mechanism for a “weight waiver” for those who exceed their maximum allowable weight (MAW) during or following a tobacco cessation program, or for those who enroll in cessation courses while in the Weight Management Program? Can these potential changes to smoking cessation intervention delivery result in a greater success rate for USAF programs and thereby greater success (and health) for tobacco cessation program participants?

The insight gained from this study will provide a picture of the perceived value and expectations of the population which USAF smoking/tobacco cessation programs exist to serve. Being able to better tailor cessation programs to the needs of the participant may ultimately provide a higher level of health for all beneficiaries and a lower cost for health services for the military medical service.

Definition of Terms

Outcome expectations is defined as the individual’s estimate that a given behavior will lead to a certain outcome (Baranowski, Perry & Parcel, 1997). For this study the participants will be surveyed regarding their perceptions of the likelihood of certain outcomes (e.g, health, social and career) if they gain weight following cessation of smoking.

Value expectancy is the subjective value of an outcome and the subjective probability (or expectation) that a particular action will result in that outcome (Baranowski, Perry &

Parcel, 1997). Study participants were asked to subjectively assign a value to health, social and career items related to weight gain following smoking cessation. In the context of Social Learning Theory, they may also be referred to as “expectancies”.

Active duty members are defined as those participants currently on active duty orders in any United States military service. In this study, active duty members who were available and eligible for services at Offutt Air Force Base, Nebraska included members of the U.S. Air Force, U.S. Army, U.S. Army National Guard, and U.S. Navy. Those individuals not meeting the active duty definition were included in the “other” research group.

Self-efficacy is defined as a person’s confidence in his/her own ability to take a particular action (Baranowski, Perry & Parcel, 1997). This construct will not be specifically measured in this investigation, however it is a component of the Social Cognitive Theory (formerly known as Social Learning Theory).

Social Cognitive Theory is a theory of human behavior which endeavors to explain that behavior through the use of several constructs; these constructs interact in determining the individual’s actual course of behavior. These constructs include expectations, reinforcement, self-efficacy, reciprocal determinism, the environment and emotional coping responses (as well as others).

Reciprocal determinism is the dynamic interaction of the person, the behavior and the environment in which the behavior is performed (Baranowski, Perry & Parcel 1997). In this study, the perceived outcome expectations and values expectancies of participants will be measured based upon their environment. Given the different status of the TCC

participants (e.g., active duty vs. other), a difference behavior or the perceived values and outcomes may exist.

Organizational culture is the shared beliefs, values, norms and assumptions that guide the behavior of the members of the organization (DeJoy & Wilson, 1995). The components of culture often unconsciously shape individual's behavior in the worksite environment, and that behavior can be assessed according to fit, strength and adaptability with one's personal beliefs.

CHAPTER 2

Review Of Literature

Introduction

This chapter is divided into the following subheadings: social cognitive theory, smoking cessation and weight gain, and workplace restrictions. Social cognitive theory includes the constructs of outcome expectation and value expectancy, which are key components of this research study. A review of smoking cessation practices and their association with weight gain provides a practical basis for comparison in this setting; both issues (smoking and weight gain) are fundamental issues in this sample and study. Workplace restrictions have a potential influence on participants in this study as they relate to Air Force policies on workplace smoking and weight status resulting in potential sanctions (outcome expectation).

The basis of this research was to investigate if these issues (value expectancy, outcome expectation, weight change) are varied for different members of the sample based upon the relevance of workplace restrictions (weight status, smoking policies) due to status (active duty members versus others).

Social Cognitive Theory

Social cognitive theory (SCT), or social learning theory (SLT), has been used in research and practice for many years to describe and explain individual behavior. “SCT explains human behavior in terms of a triadic, dynamic and reciprocal model in which behavior, personal factors and environmental influences all interact” (Baranowski, Perry,

& Parcel, 1997, p. 153). Health professionals develop interventions based upon these factors to influence and promote behavior change.

Several behavioral constructs are included in discussions related to SCT/SLT; these include environment, situation, behavioral capability, expectations (anticipatory), expectancies (personal value), self-control, observational learning, reinforcements, self-efficacy, emotional coping responses, and reciprocal determinism. Each construct is not necessarily applicable to every situation, and as such not all will be addressed in this review; however, the constructs have been used in studying many behaviors such as smoking prevention program (Langlois, Petosa, & Hallam, 1999), relapse prevention (Devins, 1992), weight loss (Oettingen & Wadden, 1991; Bradley, Poser & Johnson, 1980) and eating disorders (Sheeska, Woolcott, & MacKinnon, 1993), exercise adherence (Hallam & Petosa, 1998), drinking behavior (Solomon & Annis, 1989), general health behaviors (Conn, 1997; Strecher, DeVellis, Becker, & Rosenstock, 1986), organizational dynamics (Stajkovic & Luthans, 1998; Wood & Bandura, 1989), and even beliefs and expectations about healing (Wirth, 1995).

Bandura's social cognitive theory (SCT) addresses both the psychosocial dynamics influencing health behavior and the methods to promote behavior change. While the constructs of SCT have been used for many years in behavioral research, the definitions of the components vary within the literature; however self-efficacy, outcomes and expectations are consistent components (Kirsch, 1999). Self-efficacy is widely used to explain the confidence an individual has in their ability to perform a certain activity (Bandura, 1986; Taylor, 1995). Baranowski, Perry, and Parcel (1997) describe outcome

expectations as the individual's expectation that certain responses (e.g., behaviors) lead to certain responses. Further, expectancies are the "value" that the individual places on a particular outcome (Parcel & Baranowski, 1981). Devins (1992) notes that in SCT Bandura described the "outcome" as the consequence of an act, and not the act itself; an important distinction. As such, a value can be placed on that outcome as well as the expectation that an outcome will occur.

Conn (1997) used SCT as the basis for research to examine self-efficacy expectation and outcome expectancy to predict health behaviors among older women. Conn found that self-efficacy was the strongest predictor for health behaviors (i.e., diet, exercise, stress management), and that outcome expectancy was also a significant factor related to stress management behavior.

Outcome expectations are anticipatory aspects of behavior; it is the individual's belief in the likelihood that they will (or will not) be able to achieve the goal. Maddux (1986) describes it as the contingent relationship between a specific behavior and a specific outcome. Longo, Lent and Brown (1992) further describe outcome expectations as the individual's belief about the positive or negative consequences of performing a behavior. The individual learns that certain behaviors will lead to certain results. Baranowski, Perry and Parcel (1997) describe expectations as being learned in four ways: (1) from previous experience in similar situations (performance attainment), (2) from observing others in similar situations (vicarious learning), (3) from hearing about similar situations from other people or social persuasion, and (4) from emotional or physical responses to behaviors (physiological arousal).

Several investigators have demonstrated the use of outcome expectation, though its correlation with specific behavior change is somewhat equivocal in the literature. Many studies in outcome expectation include several constructs of SCT; self-efficacy being the most prevalent. Williams and Kinney (1991) noted that some (including Davis & Yates, 1982; Kazdin & Krouse, 1983) have suggested that self-efficacy perceptions may be derived from outcome expectations (e.g., what people think establishes a given course of action).

Jeffrey, Boles, Strycker and Glasgow (1997) and others (Perkins, Levine, Marcus & Shiffman, 1997) further investigated smoking and expectations in researching smoking-specific weight gain concerns and smoking cessation; they found that those weight gain concerns were significantly associated with gender, and that women expressed more weight concern than men.

Stewart, Strack and Graves (1997) investigated self-efficacy and outcome expectancy as the principal components in measuring oral hygiene beliefs/behaviors. They noted that, in their research, these two components were able to define 73% and 51% of the variance in participants, respectively. These components were again used to describe post treatment drinking behavior in alcoholics (Long, Hollin & Williams, 1998), though in this research higher self-efficacy expectancy was associated with a better clinical outcome, while participant outcome added little to the prediction of behavior.

Jeffery et al. (2000) noted in a study including 1,166 women and 940 men, that women with any weight concern were significantly ($p < .01 - .10$ depending on response) less likely to quit than those expressing no weight concern, though confidence in the

ability to control post-cessation weight gain was not related to smoking cessation in women. Among men, this was reversed with the concern between weight gain and quitting not significant, while the confidence to control post-cessation weight gain was significant ($p < .05$).

Longo, Lent and Brown (1992) used SCT as a framework in exploring the continuance of counseling. Their investigation included 139 students seeking counseling at a midwestern university; a survey regarding motivation, self-efficacy and outcome expectations was administered regarding treatment. They found that outcome expectation explained 23% of variance ($R = .69$, F change = 49.85, $p < .001$), and that when combined with self-efficacy provided a better explained variance and predictor of behavioral outcome.

Godding and Glasgow (1985) studied these two constructs in 34 heavy smokers and found that while self-efficacy was highly correlated with cessation ($r = .88 - .93$ for the four measured factors), outcome expectations was not ($r = .04 - .36$).

Conn (1997) however found both to be highly significant predictors of behavior in a study of health behavior in older women. Her study of 225 community-dwelling women (aged 65 – 95, $M = 74.33$) attempted to find predictors of performance of exercise, diet, and stress management health behaviors. Like others, she examined self-efficacy and outcome expectations in this population. She found correlations between behavior and outcome expectations were small, but statistically significant (exercise, $r = .38$; stress, $r = .33$; diet, $r = .29$), with the highest correlation between outcome expectation and corresponding self-efficacy for exercise ($r = .49$).

Outcome expectancies describe the value a person places on a particular outcome, hence the associated term *value expectancy*. These expectancies can then be measured in terms of their magnitude, and in terms of positive or negative personal outcomes.

“Expectancies influence behavior according to the hedonic principle; that is, if all other things are equal, a person will choose to perform an activity that maximizes a positive outcome or minimizes the negative outcome (Baranowski, 1997, p. 163). “A value or importance is attached to specific outcomes in specific situations (Maddux, 1986)”.

Value expectancy has been demonstrated as a component in a variety of research settings. The magnitude of outcome expectancies was demonstrated by Wetter et al. (1994) in relation to success in smoking cessation attempts. Domel, Alford, Cattlett, Rodriguez and Gench (1992), and Lewis, Sims, and Shannon (1989) described outcome expectancies related to food and beverage consumption.

Gritz, Nielsen and Brooks (1996) found that while gender differences in smoking cessation do exist, it is unclear whether they affect cessation outcomes; however, self-efficacy, and fear of weight gain (i.e., outcome and value expectations) are behavioral and psychological factors which are involved.

Several researchers have also noted the need to assess the expectancies of the study sample early in any planned intervention, as people tend to emphasize the immediate consequences/expectancies versus the long term. McAlister, Perry, Killen, Slinkard and Maccoby (1980) demonstrated the “value” and magnitude of negative expectancies in an adolescent smoking prevention program, while others have

demonstrated positive expectancies related to immediate effects of physical activity and weight control (Marcus et al., 1999; Talcott et al., 1995).

Shah and Higgins (1997) further investigated the interaction of value and expectancy in relation to preventive versus promotion focused activities. They noted a classic positive interactive effect of expectancy and value on goal commitment with a promotion focus, while decreased were noted with a prevention focus. They proposed that a “promotion focus” brings accomplishment while a “prevention focus” brings security, and hence a difference in the “value” of the end.

Smoking Cessation and Weight

Throughout smoking cessation research, weight changes are a common theme. French and Jeffrey (1995) noted that most male and female smokers (55% to 90%) gain weight after attempts to stop smoking; however the 1990 Surgeon General’s Report on Smoking and Health also concluded that the benefits of giving up smoking far outweigh the risks associated with the typical level of post-cessation weight gain. Smoking cessation methodologies and interventions have made an impact, but many Americans continue to smoke (American Cancer Society, 1997; Fiore et al., 1990; Kottke, Battiste, DeFriese, & Brekke, 1988; Lichtenstein & Glasgow, 1992; McBride et al., 1998; Resnicow, Royce, Vaughn, Orlandi & Smith, 1997; Tiffany & Cepedo-Benito, 1994).

Some smokers note that they use smoking as a weight loss or weight maintenance practice (Califano, 1995; Camp, Klesges, & Relyea, 1993; Jeffrey et al., 1997; Ogden & Fox, 1994; Pomerleau et al., 1993; Varner, 1999; Weekly, Klesges & Reylea, 1992), and

therefore have strong expectancies and expectations regarding weight and smoking cessation.

The anticipated weight gain associated with smoking cessation has arguably been a key factor for many individuals in the decision to attempt to stop, however the magnitude and duration of weight gain is not frequently estimated by laypersons. It appears that concerns or beliefs regarding post-cessation weight gain are more important than actual weight gain and may be associated with continued maintenance of smoking. This is especially seen in women smokers and ex-smokers (King, Matacin, Marcus, Block & Tripolone, 2000; Pomerlau, Zucker & Stewart, 2001). Chen, Rennie, Lockinger and Dosman (1998) noted that simply the fear of weight gain following cessation rather than the weight gain itself may play a key role in relapse. Smoking may be likely among those trying to lose weight, if the individual is younger than 30 years old (Wee, Rigotti, Davis & Phillips, 2001).

This fear of weight gain concern is well documented in the literature by many researchers in all facets of tobacco use. Tomeo, Field, Berkey, Colditz and Frazier (1999) suggested that contemplation of smoking was positively correlated to weight concerns, thus potentially leading to the initiation of smoking to manage these concerns. Borrelli and Mermelstein (1998) did not prospectively predict smoking status, increased weight did predict weight gain following cessation and subsequent relapse. This is supported in further research by Ockene et al. (2000).

Pomerleau, Pomerlau, Namenek and Mehringer (2000) noted that women with strong weight concerns may actually be good candidates for success, if weight gain can

be postponed beyond the first few days of cessation, but also concedes that many weight concerned individuals either do not attempt to quit or terminate early.

Glasgow et al. (1999) further supported this research in investigating 506 young female smokers and found that weight gain concern may not be a critical factor in cessation programs targeting young women. The women (mean age = 24 years) were surveyed about their concern regarding weight gain and cessation attempts using a 6-point scale (1= low, 6 = high). Smoking related weight concerns were low in this population (average = 2.4), and (using logistical regression) was not a significant factor. Also, the correlation of baseline weight gain concern to smoking outcome measures was low for each of the measures included in the study ($r = -.10 - .02$). Of note, weight gain concern did emerge as a significant predictor of weight gain over the 6 months following cessation ($p < .004$).

This lack of support for weight-gain concern as a significant factor in cessation was also studied by Jeffrey et al. (1997), who demonstrated similar results in a mixed gender sample. The researchers included subjects from 25 companies participating in a randomized trial of worksite interventions to reduce cardiovascular disease risk ($n = 242$, mean age = 39.7, mean body mass index = 26.3). Also, by French et al. (1992) who again focused on a sample of 495 women where the magnitude of weight concern did not interfere with cessation attempts. Pirie et al. (1992) noted no significant relationship between post-cessation weight gain and relapse in a sample of 417 women.

Weight gain associated with smoking cessation has been attributed to several factors, both physiological and psychological in nature. Such factors noted within the

research include participant age and gender, changes in food preferences, changes in taste and smell, and decreases in metabolic processes (i.e., metabolic rate, insulin homeostasis, lipoprotein lipase activity, etc.). Also, the amount of weight gain (and its relation to tobacco cessation) is somewhat dependent on how the factors (e.g., point prevalence cessation) are defined (Klesges et al., 1997).

Additionally, some researchers have identified “predictors” for changes in body weight in regards to smoking cessation. Froom et al. (1999) noted that cessation after entry into a program was positively related ($p < .001$) to an increase in BMI, while age ($p < .001$), initial BMI ($p < .001$), alcohol consumption ($p < .015$) and sports activity ($p < .002$) were negatively associated with BMI gain in a sample of 1209 male factory workers. Hudmon, Gritz, Clayton and Nisenbaum,(1999) also assessed predictors of weight gain among 1,219 female smokers finding that weight gain was associated with continued smoking abstinence, and “eating orientation constructs” (i.e., restrained eating, negative affect eating, disinhibited eating); weight gain was associated with both negative affect and disinhibited eating.

Smoking cessation and weight gain are frequently investigated in female samples. Mitchell and Perkins (1998) noted that women high in dietary restraint (such as the “restrained eaters” noted earlier) tend to increase food intake and thereby gain more weight during smoking cessation attempts. Perkins et al. (1997) noted that the weight gain itself (while being “essentially trivial from a health standpoint”) may be more important to cessation participants (i.e., a greater value).

Several researchers have noted that one year after cessation, nearly one third of quitters either lost weight or maintained their same weight (Jeffrey et al., 2000; Williamson et al., 1991). However, Klesges et al. (1997) suggest that the measure of weight gain following cessation may be more prevalent even in these groups, as studies using point prevalence abstinence may actually underestimate gain (as previously noted).

Concerns regarding weight gain have been demonstrated as a predictor of success in smoking cessation programs. Individuals who are concerned with potential post-cessation weight gain, or who are “weight-concerned” smokers have been demonstrated as less likely to quit at varied abstinence follow-up periods (Borrelli & Mermelstein, 1998; Hudmon et al., 1995; Meyers et al., 1997; Thun & Colditz, 1998;). Individuals who present for smoking programs may be less weight concerned than the general population, but of those in the sample who are weight concerned, they are less likely to quit smoking.

Major weight gain (>13 kg) is strongly related to smoking cessation, but it occurs in only a minority of quitters (9.8% of men and 13.2% of women). Weight gain is not likely to negate the positive health benefits of cessation, but its cosmetic effects may interfere with attempts to quit according to Williamson et al. (1991). Meyers et al. (1997) reported that participants in an 8-week smoking cessation program who were identified as weight concerned, tended to be female and were less likely to quit smoking overall.

Although smoking cessation is strongly associated with subsequent weight gain, it is not clear whether the initial gain remains over time. Mizoue, Ueda, Tokui, Hino and Yoshimura (1998) found that although heavy smokers may experience a large weight

gain in the first few years following cessation, they thereafter lose weight to the same level as those who had never smoked. Froom, Melamed and Benbassat (1998) found that the post-cessation weight gain is highest during the two years immediately following cessation and then declines thereafter.

Physical activity has been noted within the research as one method to both control weight gain and improve cessation success. Exercise participants achieved significantly higher levels of continued abstinence ($p < .03$) versus control subjects in a study by Marcus et al. (1999). Kawachi et al. (1996) reported that weight gain associated with smoking cessation may be minimized if a moderate increase in activity level is included in the cessation program/attempt. In a sample of 121,700 middle-aged women, an average weight gain of 2.4 kg was seen, but any weight gain was attenuated (in those who quit or continued to smoke) by the addition of moderate physical activity. Research by Froom, Melemed and Bembassat (1998) supported physical exercise as one method to attenuate the degree of weight gain following smoking cessation. While moderate weight gain following cessation is generally accepted as a long-term consequence (Hall, Tunstall, Vila & Duffy, 1992; Hall, Ginsberg & Jones, 1986), there appear to be factors (e.g., exercise, nutrition interventions, nicotine replacement, etc.) that can play a role in its mitigation.

However, while a relationship between smoking behavior and weight (whether through smoking to maintain weight or weight concern associated with cessation), the military population has some particular issues related to both weight and the previously

discussed SCT constructs. Policy dictates certain standards (Air Force Instruction 40-502, 1 July 1999; Air Force Policy Directive 40-5, 1 December 1997).

Smoking cessation in the military population has also been addressed by several investigators (Carpenter, 1998; Helyer et al., 1998; Klesges et al., 1998; Kroutil, Bray, & Marsden, 1994; Peterson & Helton, 2000), and through policy (Dept. of Defense Instruction 1010.15). Some of these studies have researched smoking cessation as a single entity, while others have included weight as another component within their design. Peterson and Helton (2000) studied 70 active duty Air Force members at Lakenheath Air Base, UK. Their study revealed an average weight gain of 5.5 pounds ($p < .001$ for change from initial weight) in men and 9.8 pounds ($p < .001$) in women who successfully quit smoking. Overall, they noted weight gain in 88% of their sample at 13 weeks after quit date.

Talcott et al. (1995) found that weight gain following smoking cessation can be limited, and that fear of weight gain was unrelated to weight change in a military population. They demonstrated this in a sample of 332 military recruits who were included in an intensive cessation program that limited alcohol and foods high in fat, as well as increases in physical activity.

A second study of military recruits (Klesges et al., 1998) concluded that smoking had no effect on the body weights of young women and minimal effects in young men when compared with those who never smoked.

Workplace Restrictions and Implications

Implications of both workplace tobacco policies and the implications of other workplace restrictions will be discussed in this review in a comprehensive approach. In the past several decades, health promotion and health enhancing practices have become common place as America attempts to come to terms with our declining preventive health status. Interventions to modifying health habits such as diet, exercise, etc. (Glasgow et al., 1994; Hallam & Petosa, 1998) are common health promotion programs. While some strides have been made in reducing tobacco use (in some population groups), promoting screening for various cancers, etc., several other health practices have continued to move in a more “negative” direction (i.e., exercise, overall weight, sexual practices, etc.) “Most adults spend one-third of their average day in a work site environment. For this reason, the work site has the potential of being a setting through which large groups of smokers can be reached with health promotion” (Willemsen et al., 1998, p. 418). Restrictions on personal practices have been implemented in both general public establishments (i.e., restaurants, public transportation, etc.), but also in the workplace (Allegrante & Sloan, 1986; Green, 1988; Biener, Abrams, Follick, & Dean, 1989; Ericksen & Gottlieb, 1998). Tobacco cessation initiatives/policies have also been included as a work site approach to reducing heart disease risk in certain employee populations (Glasgow et al., 1994).

Eriksen and Gottlieb (1998) completed a review of smoking control practices in the workplace between 1968 and 1994, which included 52 studies. Their review noted that “smoking cessation group programs were found to be more effective than minimal

treatment programs” and that “tobacco policies were found to reduce cigarette consumption at work”, both issues of concern for the United States Air Force (Air Force Instruction 40 – 102, 3 June 1994).

Smoking bans in the workplace are commonplace today both in the United States and abroad. Many different areas are included in research about worksite smoking policies, including stages of change, social support, varying program components and length, etc. Terborg, Hibbard, and Glasgow (1995) reported that employees who felt strong social support for not smoking and for limiting dietary fat were less likely to smoke, though social support at work did not appear to predict future behavior change in a prospective study of 25 small to medium sized worksites.

Parry, Platt and Thompson (1999) describe workplace smoking restrictions at a Scottish university; they noted that some of those who continue to smoke claim that the bans have affected their work routines, and that the smoking ban also appears to have heightened resentment and intolerance towards non-smokers. Ericksen and Gottlieb (1998) completed a comprehensive review of worksite cessation programs and noted that tobacco policies were found to reduce cigarette consumption at work and worksite environmental tobacco smoke exposure.

This reduction in cigarette consumption was also illustrated in the United Kingdom (Styles & Capewell, 1998) where those working in an environment with a total smoking ban smoked significantly less than those working in a partial ban on both working days ($p = .04$) and non-working days ($p = .002$), and in the U.S. by Brigham et al. (1994) who noted a significant decrease ($p < .05$) in cigarette consumption following

the implementation of a smoking restriction. Hudzinski and Sirois (1994) demonstrated the opposite results in a study of 40 employees at a major medical institution, where the decrease in daily cigarette consumption was only seen for the first six months following the initiation of a no-smoking policy.

Fisher et al. (1994) noted the need to include both smokers and non-smokers in any worksite smoking intervention, “the intervention should underscore nonsmoking as a valued norm among all employees (p. 46).” They noted that a “community approach” in the workplace using organizational support resulted in quit rates ranging from 21% - 41% in participants and 10% - 25% in non-participants at 12 to 24 month follow-up dates at four study locations. Certainly it appears that a workplace intervention can influence both active participants as well as other employees.

Incentives and competition in the workplace appear to enhance quit rates in the short-term (Koffman, Lee, Hopp, & Emont, 1998), but do not appear to be factors in maintaining long term abstinence. Koffman et al. conducted a study at three worksites and identified a 6-month abstinence rate of 41% for participants in an incentive-competition program versus 8% for a traditional cessation program.

The extent of smoking bans at the worksite (full versus partial) also appears to impact the percentage of employees who consider cessation, as well as employee confidence in achieving abstinence. Researchers Styles and Capewell (1998) noted that a complete ban on smoking in the workplace reveals a greater percentage of employees preparing to quit ($p < .05$) and twice as many smokers being very or fairly confident in the attempt ($p < .01$). In their research, “total rather than partial bans on smoking at work

were recommended, though almost half of the smokers had tried to quit since restrictions were introduced at their workplaces” (p. 389). There was no significant association with the type of restriction.

Willemsen, de Vries, van Breukelen and Genders (1998) found that European work site cessation programs were effective, but that the minimal programs produced almost as high quit rates as more comprehensive programs. They found, specifically, that the cessation and relapse rates among Dutch work sites were not significantly different whether a comprehensive treatment program or a minimal treatment program was attended. The comprehensive program included the initiation of work site smoking restrictions or policies.

Smoking policies and interventions within the workplace are varied both in the United States and abroad. What does appear to be consistent within the literature is a decrease in tobacco consumption when a smoking policy is implemented (whether total or partial), however the maintenance of this behavior change is complex (social support, stage of change, etc.). The success of specific cessation program components (i.e., self-help, mass media, comprehensive, etc.) are far less clear (Klesges et al., 1988).

Study of a military smoking cessation program by Helyer et al. (1998) noted that while only 26.7% of participants were abstinent at 12-months following the intervention, 64% of those who resumed smoking reported smoking less than before the program. Klesges, Lando, Haddock, and Talcott (1999) supported this in the military, as did Brigham, Gross, Stitzer and Felch (1994) in a civilian workplace.

Still, the behavioral component of changing (or manipulating) behaviors in the workplace go beyond smoking and weight concern, though these are the two key risk factors for many health concerns. The behavioral issues of how individual's seek certain outcomes (or expectations) or how they value certain outcome can also be seen in the research. Interestingly, Khojasteh (1993) found that private and public sector employees are equally motivated by intrinsic rewards of achievement and advancement; this may be a promotion for the military member. He notes that it is employability security which is valued, not necessarily employment security.

Wood and Bandura (1989) note the importance of personal standards and matching adopted goals between the individual and the organization. However, Karl and Sutton (1998) found that it was important for employers to keep in touch with changes in employee's workplace values; they noted no difference in the importance of job security between public and private employees, but public employees value interesting work at a higher level.

Raelin (1984) noted that conflicting expectations between an individual and the organization may ultimately lead to deviant or adaptive behavior. Conflicting expectations and outcomes may lead to negative behaviors; these behaviors may emanate from two nearly counteractive management practices: (1) lack of social control mechanism and (2) lack of commitment enhancing policies.

DeJoy and Wilson (1995) discuss the corporate culture in terms of encouraging and rewarding employees for healthy behaviors in health promotion activities. This mixed message may be seen by members of the Air Force who are encouraged to adopt

healthy lifestyles (especially including not smoking), however they may perceive this as an unrealistic outcome given their weight concern.

Lent, Brown and Hackett (1994) discussed the impact of not only self-efficacy, but also outcome expectation in regard to career goals and the relative value or importance of these outcomes to the individual; all very important in the context of this research.

Summary

Each of the previously noted areas within the literature review have implications in this investigation. While neither the amount of weight gain, nor actual success in smoking cessation are the focus of this study, they are important factors included within the literature. Especially in the military population of this study, the impact of value expectancy and outcome expectation are important, given the perceived negative consequences which may occur with weight gain (depending on the individual's group membership within the sample).

The literature does suggest a tendency towards weight gain following smoking cessation, and the majority of information relating to "weight concerned" subjects tends to implicate female participants (though research specifically targeting weight concerned males is limited). Additionally, the research tends to note similar perceptions between public and private sector employees, however no research specific to the military was found. As such, this may be a key issue in comparing the perceived values and outcomes between the groups in this sample.

CHAPTER 3

Methods

Introduction

This chapter will detail the process used to recruit volunteer subjects for this study and the techniques used to obtain measures of individual perceptions in regards to Social Cognitive Theory. Later portions of the chapter will describe the distribution of the survey instrument and data collection procedures, as well as the type of statistical analysis used in comparing scores between the two study groups (e.g., active duty versus others).

Previous studies regarding smoking cessation and weight gain have focused primarily on the objective measures of change in participant body weight from the initiation of smoking cessation interventions to some point in time during or following intervention completion. This investigation included evaluation of objective measures of body weight, but also subjective indicators (i.e., self-efficacy, outcome expectation, value expectancy) which may influence which participants are more likely to gain weight.

Study Population and Sample

The study population for this investigation included all eligible beneficiaries who registered in the tobacco cessation classes (TCC) sponsored by the Health and Wellness Center (HAWC), Offutt Air Force Base, Nebraska. All members who registered for TCC in January – March 2001, as well as those returning to the HAWC for TCC follow-up (attended last class of 2000) were eligible to participate in the investigation, and the study sample comprised of those eligible participants who agreed to participate. The greater

population from which the study population and sample was drawn included all employees (active duty, reserve, civilian) of Offutt Air Force Base, Nebraska and local military retirees and their dependents.

Population Demographics

Demographic characteristics of the study sample included a diverse combination of educational levels, socio-economic status, occupations and ages. Both male and female members were eligible to participate, and marital status, rank and branch of service varied. Weight standards are similar among the military services (of those active duty members who had potential to be included in this study), and as such, Air Force standards weight standards were used in making data analysis. As previously noted, all personnel who registered in the tobacco cessation class (January – March 2001) were eligible to participate in this investigation; the HAWC currently offers both a day and evening class each month, with the total monthly enrollment of 30 – 35 participants. This study included registrants from three consecutive classes; therefore a study population of approximately 90 members was anticipated, with 50 members volunteering to participate as the sample. The actual result was less than anticipated, and 37 members voluntarily returned surveys (of which some were incomplete).

Population Characteristics

All participants in this investigation were eligible beneficiaries for services at Offutt Air Force Base (AFB), Nebraska. Participants included active duty personnel, civilian employees, retired military members and eligible dependents (spouses, parents,

etc.). Participants in the smoking cessation program (and therefore this study) were primarily from the Omaha metro area, Offutt AFB and other local communities.

The members who participate in the HAWC smoking cessation program have various personal reasons for attempting to quit tobacco, however the identification of these factors is not explicitly a component of this investigation. It is clear within the literature, that the majority of people who attempt to quit smoking gain weight; this fact, in particular, is of potential significance to the active duty participants due to the possible negative consequences of weight change/gain in relation to the individual's maximum allowable weight (MAW).

All HAWC smoking cessation classes (based upon review of class rosters for the past year) included both male and female members, as well as active duty and "other" members (i.e., civilian, dependent status classification, etc.). Demographic characteristics of the sample are presented in Chapter 4.

Current TCC Program Components

Tobacco cessation courses (TCC) at Offutt Air Force base are coordinated and meet at the Health & Wellness Center. The program consists of a four-week series of meetings (available once each week for one day or evening) during which participants are facilitated in their cessation attempt using the American Cancer Society's FreshStart curriculum. Participants provide a brief medical and smoking history as baseline information and to assist in medication selection, as required. Topics covered in the program include behavior modification principles, stress management techniques, nutrition and exercise information, and medication information.

Measurement and Instrumentation

The measures collected in this study were obtained through the use of a survey instrument. The survey was developed for this study and the final version was achieved following pilot testing of three previous versions. The preliminary survey instruments were pre-tested using people drawn from the population to be studied, the potential users of the data, and three health and education colleagues at the University of Nebraska at Omaha. This technique was employed to improve the validity and reliability of the instrument (Stacy, 1987), as well as limit any ambiguity that may have existed due to the military background of the participants and researchers.

Survey Instrument. The survey was divided into four sections. The first section required the respondent to provide demographic and physical information (e.g., gender, age, height, weight), and information about their status (e.g., active duty, dependent, etc.) Section two was designed to obtain information about the individuals' smoking and weight history to include recent weight changes and perceptions regarding the significance of weight gain. Section three was designed to obtain perceptions of outcome expectations regarding health, social and career items if they gain weight; a 5-point Likert scale was utilized (see Appendix A). A detailed description of indicators is described later. Section four examined the respondents perceptions of value expectancy as it related to the same items (health, social and career); a 5-point Likert scale was used again. Sections three and four totaled 32 questions, and the entire survey required approximately 10 minutes to complete.

The individual questions corresponded to the constructs as follows:

Section III – Perceived Outcome Expectations

Questions 1 – 5	Health Outcome Expectation
Questions 6 – 10	Social Outcome Expectation
Questions 11 – 16	Career Outcome Expectation

Section IV – Perceived Value Expectancy

Questions 17 – 21	Health Value Expectancy
Questions 22 – 26	Social Value Expectancy
Questions 27 – 32	Career Value Expectancy

Mean scores for each of the six identified constructs were calculated and then compared between the two study groups (e.g., active duty vs. other). To obtain the mean construct score, the responses for each individual question related a construct (such as health outcome expectation) were summed and divided by the number of questions. For example, an individual's responses to questions 1 – 5 were summed and divided by five to obtain a mean health outcome expectation for that respondent. This process was used for each study participant, and then finally the "group" mean score for each of the six constructs was calculated for comparison. All questions were completed using a 5-point Likert scale ranging from "not at all important/likely" (1) to "extremely important/likely" (5); see copy of instrument in Appendix A. Specific tests for establishing test-retest reliability, stability and construct validity were not conducted for this instrument, nor were they included in this study. Reliability estimates using coefficient alpha for the three constructs (e.g., health, social and career) are included in Chapter 4.

Study Design and Data Collection

This study is non-experimental and analytical in design using participants in the Offutt Air Force Base tobacco cessation program as prospective participants. Individuals registered for the January – March 2001 TCC program, and those visiting for follow-up from the last TCC class of 2000 were included. They were offered to opportunity to participate by voluntarily completing a survey that was provided for them. Surveys were distributed outside of the formal TCC class setting for those who chose to obtain the instrument at the HAWC. Surveys were mailed to other potential participants per their request. Participation was on a voluntary basis, and member confidentiality was assured, as no method of identification was included in the survey (e.g., name, social security number, etc.) In addition, cessation program members were assured that their participation (or non-participation) in this study has no bearing on the cessation intervention. Each survey included a cover letter (included in Appendix A) describing the survey as well as a mechanism to contact the researcher if required. A stamped self-addressed envelope was provided with each survey. Institutional Review Board (IRB) approval was received (see Appendix C), and the study number was noted on the cover letter. Completed surveys were returned and placed in sealed envelopes or received via mail.

Statistical Analysis

Descriptive statistics were used to illustrate demographic data from the sample, as well as data regarding smoking and weight history (survey sections I and II). The independent variable in this study was group membership (e.g., active duty vs. other).

The dependent variables were respondents' scores for the six constructs: outcome expectation (health, social and career) and value expectancy (health, social and career). Independent t-tests was performed to compare the mean scores for each of the six constructs between the two groups. An alpha level of .01 was utilized to control for potential Type I decision error as a result of multiple t-tests. No significant differences in mean scores were achieved.

Statistical Hypotheses

Ho: There will be no significant difference in the mean scores for perceived health outcome expectation between the two groups.

HA: There will be a significant difference in the mean scores for perceived health outcome expectation between the two groups.

Ho: There will be no significant difference in mean scores for perceived social outcome expectation between the two groups.

HA: There will be a significant difference in mean scores for perceived social outcome expectation between the two groups.

Ho: There will be no significant difference in mean scores for perceived career outcome expectation between the two groups.

HA: There will be a significant difference in the mean scores for perceived career outcome expectation between the two groups.

Ho: There will be no significant difference is the mean scores for perceived health value expectancy between the two groups.

HA: There will be a significant difference in mean scores for perceived health value expectancy between the two groups.

Ho: There will be no significant difference in mean scores for perceived social value expectancy between the two groups.

HA: There will be a significant difference in mean scores for perceived social value expectancy between the two groups.

Ho: There will be no significant difference in mean scores for perceived career value expectancy between the two groups.

HA: There will be a significant difference in mean scores for perceived career value expectancy between the two groups.

CHAPTER 4

Results

The purpose of this study was to examine the difference in outcome expectation and value expectancy regarding weight gain among participants in an Air Force tobacco cessation program. The demographic data of the participants will be described, followed by a descriptive table. The statistical analyses, using independent t-tests (Berg & Latin, 1994), will then be displayed illustrating the comparison of mean scores between the two groups regarding health, social and career outcome expectations; the same analysis will then be shown for health, social and career value expectancies between the groups.

Table 1 illustrates the demographic characteristics of the sample, while Table 2 illustrates the smoking and weight characteristics of the survey respondents. All participants were self-selected members of the tobacco cessation program at the Offutt Air Force Base Health and Wellness Center. Survey respondents also self-selected the specific class that they attended (e.g., day vs. evening, month of attendance, etc.). Out of the eighty-nine members offered the opportunity to participate in the study, thirty-six surveys were returned (40% return rate). Of those surveys returned, two were incomplete and were not used for construct analysis (e.g., health, social and career outcomes and expectancies); however one was complete enough to be used in illustrating smoking and weight history, as such group membership totals 34 individuals.

Respondents included both genders and were nearly even (17 female, 18 male); however in identifying “group” membership for comparison of constructs, the majority of respondents were active duty (67.7 %) versus other (32.3 %). All groups which were

routinely participants in the tobacco cessation program were also included in the characteristics of respondent surveys (e.g., both genders, active duty, civilian, dependent and retired members).

Table 1: Demographic characteristics of the sample population (n = 35)

Variable	Range Mean (Std. Dev.)	Frequency	Percent
Age	18 – 58 36.37 (10.33)		
Gender			
Male		18	51.4
Female		17	48.6
Group Membership			
Active Duty		23	67.6
Other		11	32.4

Table 2 describes the smoking and weight characteristics of the sample. As noted previously, the active duty members are required to maintain weight standards in accordance with Air Force directives (AFI 40-52, 1 July 1999). The maximum allowable weight is established for each individual based on gender and height using Air Force standards. Perceptions of respondents regarding weight gain concern were also included in the survey; a copy of the survey is included in Appendix A.

Table 2: Smoking and weight characteristics of the sample population (n =35)

Variable	Range Mean (Std. Dev.)	Frequency	Percent
Years Smoked	1 – 30 16 (9.78)		
Cigarettes/Day	6 – 30 18 (7)		
Pack Years	10 – 900 317 (238)		
% MAW			
Males		18	94 %
Females		17	91 %
Currently on Weight Program			
Yes		4	11.4 %
No		31	88.6 %
Weight Change in Last 6 Months			
Yes		11	31.4 %
No		24	68.6 %
Believe Cessation Will Lead to Weight Gain			
Yes		13	37.1 %
No		13	37.1 %
Not Sure		9	25.7 %
Pounds of Weight Gained Considered Significant	0 – 30 9.29 (6.66)		

Statistical Analyses

An independent t-test was used to determine if significant differences existed between the two groups (e.g., active duty vs. other) in relation to outcome expectation and value expectancy for health, social and career items. Excel software from the Microsoft Office 2000 suite was used for data analysis. Independent t-tests were conducted; three for outcome expectation (health, social and career) and three for value expectancy (health, social and career). A significance level of .01 was used; this stringent level was chosen to minimize potential Type I decision errors given the number of t-tests used in the analysis. SPSS Version 10.0 was used to compute reliability coefficients for the survey questions relating to each construct (e.g., health outcome, social outcome, career outcome, health value, social value, career value).

To obtain mean scores for each group regarding each construct, individual responses to questions were combined to obtain one mean score for each construct. The following illustrates how the questions were grouped:

Questions 1 – 5	Health Outcome Expectation
Questions 6 – 10	Social Outcome Expectation
Questions 11 – 16	Career Outcome Expectation
Questions 17 – 21	Health Value Expectancy
Questions 22 – 26	Social Value Expectancy
Questions 27 – 32	Career Value Expectancy

The mean scores for each construct were then compared between the active duty respondents and all others.

Results of Analytical Statistics

The following results summarize the six independent t- tests (assuming equal variance) comparing the mean scores between the two study groups (active duty versus all others). A significance level of .01 was used for all analyses, and a two-tailed format was adopted by the researcher. No statistically significant difference ($p > .01$) in mean scores was obtained in any of the comparisons.

The independent t-test comparing mean scores between the two study groups revealed no significant difference ($p < .01$). The reliability coefficient for perceived health outcome questions (numbers 1 – 5) equaled .9283.

Table 3: Independent t-test comparing means and standard deviations for perceived health outcomes (n = 34)

Variable	Valid n	Possible Range (Observed Range)	Mean Score (Std. Dev.)	p Value
Health Outcome				
AD	23	5 – 25 (5 - 25)	2.54 (1.21)	
Other	11	5 – 25 (5 – 22)	2.71 (0.95)	0.66

Comparison of mean scores for the two groups related to perceived social outcomes showed no significant difference ($p > .01$) between the two groups. The

reliability coefficient for perceived social outcome questions (numbers 6 – 10) equaled .8828.

Table 4: Independent t-test comparing means and standard deviations for perceived social outcomes (n = 34)

Variable	Valid n	Possible Range (Observed Range)	Mean Score (Std. Dev.)	p Value
Social Outcome				
AD	23	5 – 25 (5 – 25)	2.42 (1.41)	
Other	11	5 – 25 (5 – 17)	2.15 (0.72)	
				0.50

Comparison of mean scores between the two study groups relating to perceived career outcomes was not significantly different ($p > .01$). The reliability coefficient for perceived career outcome questions (numbers 11 – 16) equaled .9027.

Table 5: Independent t-test comparing means and standard deviations for perceived career outcomes (n = 34)

Variable	Valid n	Possible Range (Observed Range)	Mean Score (Std. Dev.)	p Value
Career Outcome				
AD	23	6 – 30 (6 – 30)	2.42 (1.21)	
Other	11	6 – 30 (6 – 20)	1.75 (0.95)	
				0.12

Comparison of mean scores between the two study groups relating to perceived health value expectancies was not significantly different ($p > .01$). The reliability coefficient for questions related to perceived health values (numbers 17 – 21) equaled .9197.

Table 6: Independent t-test comparing means and standard deviations for perceived health value expectancies (n = 34)

Variable	Valid n	Possible Range (Observed Range)	Mean Score (Std. Dev.)	p Value
Health Value				
AD	23	5 – 25 (5 – 25)	3.93 (0.83)	
Other	11	5 – 25 (12 – 25)	4.36 (0.75)	
				0.20

The comparison of mean scores between the two study groups relating to perceived social value expectancies was not significantly different ($p > .01$). The reliability coefficient for questions relating to social value expectancies (numbers 22 – 26) equaled .8331

Table 7: Independent t-test comparing means and standard deviations for perceived social value expectancies (n = 34)

Variable	Valid n	Possible Range (Observed Range)	Mean Score (Std. Dev.)	p Value
Social Value				
AD	23	5 – 25 (7 – 25)	3.90 (0.80)	
Other	11	5 – 25 (12 – 25)	3.55 (0.75)	
				0.28

The comparison of mean scores related to perceived career value expectancies was not significantly different ($p > .01$) between the two groups. The reliability coefficient for questions related to perceived career expectancies (numbers 27 – 32) equaled .8847.

Table 8: Independent t-test comparing means and standard deviations for perceived career value expectancies (n = 34)

Variable	Valid n	Possible Range (Observed Range)	Mean Score (Std. Dev.)	p Value
Career Value				
AD	23	6 – 30 (13 – 30)	4.06 (0.83)	
Other	11	6 – 30 (11 – 30)	3.67 (1.13)	
				0.24

No statistical significance in means was obtained at the .01 level for any comparisons.

Omega squared calculations revealed little explained variance regarding factors.

CHAPTER 5

Discussion

Introduction

The sample in this study included individuals from varying segments of the population at Offutt Air Force Base, Nebraska who registered for tobacco cessation classes (TCC) at the Health and Wellness Center. While the U.S. military desires healthy and “fit” personnel, only the active duty members are subject to certain policies (e.g., restrictions) based upon their status; one of these unique restrictions is in regards to maximum allowable weight. The active duty member who exceeds their individual MAW is subject to administrative and disciplinary action, while the same consequences do not exist for others (e.g., civilians, dependents, retirees). Weight gain following tobacco cessation is a common occurrence noted within the literature.

Conclusion

As such, an investigation of constructs regarding weight gain was examined in this sample (TCC registrants) relating to perceived health, social and career outcomes and values. A difference in the outcome expectation and value expectancy between active duty members and other TCC users (e.g., civilians, dependents, retirees) was expected, however this was not supported. There was no statistically significant difference in the mean scores at the .01 level of significance. This compares with the research of Khojasteh (1993) and Wood and Bandura’s (1989) findings regarding private and public sector employees who found similar work-related values among these two groups.

While previous studies in military populations have compared smoking/tobacco cessation rates with similar civilian populations, as well as comparing weight gain following smoking cessation, none have endeavored to examine the potential differences among those individuals in military tobacco cessation programs. While many individuals who stop smoking are subject to potential health and social consequences due to weight gain, only the active duty member faces a potentially negative career consequence if weight gain causes him/her to exceed their maximum allowable weight.

The active duty member faces explicit standards against which they will be evaluated (with potentially negative consequences for noncompliance), however each of the “others” may also feel some impact based upon their association with the “military culture” or environment. Even though the individual respondent may not be active duty, they may, in effect, attempt to meet similar standards due to their inclusion in this “culture” now (e.g., government employee) or in the past (e.g., retired member). These similar perceptions would lead to similar responses via the survey instrument, even it resulted in different study “group” membership.

This study, while finding no significant statistical difference among the groups in this sample, did provide an objective measure of perceptions regarding health, social and career. Subjectively, individuals have noted that they continue to smoke in attempts “to maintain weight and stay off the weight program”; this may be beneficial in the short-term, but at what long-term cost to the individual and the military.

Limitations

The survey instrument used for this investigation was originated for this study. While the survey was pilot tested with several groups (potential users, health education professionals, and end users) prior to its use for the formal investigation, its validity and reliability need to be confirmed in further research.

Sample size was another limitation of this study. A larger sample size would allow for an increased opportunity to perhaps find differences between the groups. Though this greater statistical power may have demonstrated significant differences, study results provided information that can be of *clinical* significance in current and future military tobacco cessation offerings. Additionally, a more diverse sample would have provided an opportunity for further comparisons (e.g., those nearing retirement versus those remaining on active duty for the foreseeable future), however due to small sample size these comparisons were not made in the context of this study.

The low survey response rate may have also had an impact on this investigation. A bias in results may have occurred based upon the respondents' perceptions of the constructs examined in this study. Associated with this is the potential impact of the military "corporate culture" which all respondents have experience with at some level.

Recommendations for Further Research

Several opportunities for further research in this population exist in relation to both smoking cessation strategies, and gender related issues. There is a great deal of information in the literature targeting the use (or initiation) of smoking for weight control, especially in females. This group would certainly be one to target in regard to

both behaviors – weight concern and smoking. Anecdotally, the researcher has had discussions with active duty women who have expressed a desire to stop smoking, but decide not to attempt cessation due to weight concern; these members were not included in this study as they never registered for the program.

Another area for research in this population concerns the change or relapse into smoking behavior due to the occupational stress of deployment. Again anecdotally, many members in the tobacco cessation program relate that they started smoking (or started smoking again) during deployment. This area of research could not only clarify issues related to the smoking behavior, but also examine the most effective and appropriate mechanisms to ensure support for cessation is available in deployed location.

Implications for Practitioners

As health practitioners, we strive to encourage health-enhancing, health promoting practice in those with whom we interact, certainly smoking is one of our greatest challenges, however the weight gain associated with cessation (real or perceived) may be one of the strongest factors which reinforces this negative health behavior. In order to be most effective, the practitioner must attempt to understand the values and outcomes that individuals attach to any behavior change; especially if there are real negative consequences associated with the results of the behavior change. Ultimately the practitioner must understand the interaction between the person, the behavior and *their* environment.

Military members have real and specific negative consequences that may occur due to weight gain associated with tobacco cessation. These factors may ultimately

reinforce the smoking habit for many active duty members; and given the addictive nature of nicotine, the military will also likely continue to deal with the consequences of continued smoking in increased health costs in dependents, and retirees, as well as increased lost productivity in the active duty members.

A new approach to tobacco cessation may be required due to the potential differences in values and outcomes given the varied nature of participants, even though a *significant* difference was not demonstrated in this small sample. Also, as weight gain in this population has been shown to be consistent with the civilian population (Peterson & Helton, 2000) and weight concern for many is a reason to continue smoking, a process may need to be adapted to allow for a short term “weight waiver” for those near their maximum allowable weight and attempting cessation. The overall health benefit of tobacco cessation would make a much greater impact on quality of life for the active duty member; a mechanism which incorporates common post-cessation would assist the member to achieve a successful outcome in their attempt.

Summary

No significant difference was found in the perceived health, social, career outcome expectations and value expectancies related to weight gain following tobacco cessation; however career outcome expectation neared significance. Do we reinforce smoking in some members? Does one intervention meet the needs of all of those eligible to participate in military tobacco cessation programs? Only continued research will answer these questions. The fact is that tobacco use rates have plateaued in the past few

years both in the civilian and military populations. The Air Force tobacco reduction plan has been in place for nearly 10 years, yet we are still far from “tobacco free”.

A successful tobacco cessation program must consider the values and outcomes that all participants bring to the intervention. Changes must be made to make an impact into this public health concern, and to provide a healthier, fitter fighting force for the nation. The support of a comprehensive health promotion program and the use of multi-disciplinary approaches may well be the most effective in this population. The military will reduce medical costs and ultimately the quality of life for all members will be improved.

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APPENDICES

APPENDIX A:

**Survey Instrument
(including Cover Letter)**

IRB#: 122-01-EX

Dear Tobacco Cessation Participant:

I am surveying all individuals who participated in the Offutt Air Force Base tobacco cessation program over the past quarter (January – March 2001) to describe the possible differences in expectations and values regarding weight. I am a graduate student at the University of Nebraska at Omaha conducting research for a Master's thesis.

While a great deal of information is available noting weight changes following tobacco cessation, very little has focused on the different values associated with weight change among participants. The purpose of this study is to examine the differences in the value and expectations related to post-cessation weight gain among tobacco cessation course participants (i.e., military versus non-military, male versus female, etc.)

The attached survey will take approximately 10 minutes to complete. All provided information will be kept **strictly confidential**, and will only be used for the purposes of this investigation. Once analysis is completed, group results will be available at the Health and Wellness Center (HAWC); no individual results will be reported.

Please insert your completed survey into the provided envelope (ensure it is sealed), and then place in the mail or return to the HAWC reception desk. If you have any questions, please feel free to contact me at 554-2670 or at 896-3840. Please return your survey and **return by 28 March 2001**. Your assistance is greatly appreciated and may be of great benefit to future tobacco cessation participants.

Sincerely,



JAMES E. REINEKE
MS Candidate, University of Nebraska - Omaha

Date: _____

Survey of Value Expectancy and Outcome Expectations About Weight Gain

Section I: Demographic Information

Please complete the areas of Section I that correspond with your current status. You must complete one area (active duty or non-active duty).

Gender: _____ (Male/Female) Age: _____ Height: _____ Weight: _____

Active Duty Participants:

Status (check one):

- _____ Commissioned Officer
 _____ Non-Commissioned Officer
 _____ Other Enlisted

Status (check one):

- _____ Plan to remain active duty for 1 year or more from this date.
 _____ Plan to remain active duty for less than one year from this date.

Non-active Duty Participants:

Status (check one):

- _____ Civilian Employee
 _____ Retired Military
 _____ Dependent

Section II: Smoking and Weight History

Please answer each of the following questions regarding your weight and smoking history.

How many cigarettes do you smoke in a day? _____

How many years have you smoked? _____

Are you currently on a weight reduction program? Yes _____ No _____
 (this includes Air Force program or others)

Have you had a weight change in the last six (6) months? Yes _____ No _____
 If so, how many pounds? _____ Gain/Loss (circle one)

How many pounds of weight gain would be a significant concern for you? _____

Do you think that stopping smoking will (or has) resulted in a significant weight gain for you?

Yes _____ No _____ Not Sure _____

Section III: Please mark the response that best describes your expectations regarding each of the following outcome statements:

If I gain weight, how likely is it that I will ...

	1 Not At All Likely	2 Somewhat Likely	3 Moderately Likely	4 Very Likely	5 Extremely Likely
1. Increase my risk for heart disease	_____	_____	_____	_____	_____
2. Increase my risk for an early death	_____	_____	_____	_____	_____
3. Decrease my overall health status.....	_____	_____	_____	_____	_____
4. Get sick (not feel well) more frequently	_____	_____	_____	_____	_____
5. Increase my risk for joint injuries	_____	_____	_____	_____	_____
6. Be less of a role model for my family	_____	_____	_____	_____	_____
7. Be less attractive	_____	_____	_____	_____	_____
8. Be invited to fewer social events	_____	_____	_____	_____	_____
9. Have fewer social contacts/friends	_____	_____	_____	_____	_____
10. Attend fewer social events	_____	_____	_____	_____	_____
11. Be less of a role model at work	_____	_____	_____	_____	_____
12. Receive negative performance evaluations	_____	_____	_____	_____	_____
13. Reduce my opportunities for career advancement	_____	_____	_____	_____	_____
14. Affect my opportunities for retirement	_____	_____	_____	_____	_____
15. Receive negative feedback about weight from supervisor ...	_____	_____	_____	_____	_____
16. Will not look "good" in my professional/work clothes	_____	_____	_____	_____	_____

****Please continue to the next page****

Section IV: Please mark the response that best describes the importance of each of the following statements.

How important is it that you

	1	2	3	4	5
	Not At All Important	Somewhat Important	Moderately Important	Very Important	Extremely Important
17. Maintain (or reduce) your current risk for heart disease ..	_____	_____	_____	_____	_____
18. Maintain (or reduce) your risk for an early death	_____	_____	_____	_____	_____
19. Maintain (or improve) your overall health	_____	_____	_____	_____	_____
20. Not feel ill more frequently	_____	_____	_____	_____	_____
21. Maintain (or reduce) your risk for joint injuries	_____	_____	_____	_____	_____
22. Be a positive role model for your family	_____	_____	_____	_____	_____
23. Be attractive	_____	_____	_____	_____	_____
24. Be invited to social events	_____	_____	_____	_____	_____
25. Maintain current friends/social contacts	_____	_____	_____	_____	_____
26. Attend social events	_____	_____	_____	_____	_____
27. Be a positive role model at work	_____	_____	_____	_____	_____
28. Receive positive performance evaluations	_____	_____	_____	_____	_____
29. Maintain your opportunities for career advancement	_____	_____	_____	_____	_____
30. Maintain your current opportunities for retirement	_____	_____	_____	_____	_____
31. Avoid negative feedback re. weight from supervisor	_____	_____	_____	_____	_____
32. Look "good" in your professional/work clothes	_____	_____	_____	_____	_____

Thank you for taking time to complete this survey. If you have any questions, please contact me at the numbers listed on the introductory letter. After analysis, results will be available at the Offutt Health & Wellness Center.

APPENDIX B:
Health and Wellness Center Approval



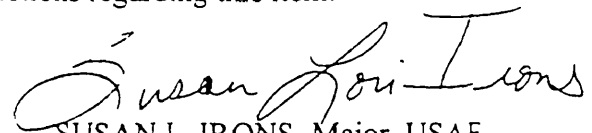
13 March 2001

MEMORANDUM FOR: Major James Reineke

FROM: Major Susan Irons
Health Promotion Flight Commander

SUBJ: Permission to Conduct Graduate Project Survey

1. Major Reineke's request to distribute a survey regarding values and outcome expectations related to weight gain among volunteers from the Health and Wellness Center tobacco cessation course is approved.
2. Distribution of the survey and cover letter should be accomplished outside of the formal class session, and completion by potential subjects must be on a voluntary basis.
3. Ensure that potential participants are aware that this project is not an in-house, government sponsored survey.
4. Please contact me if you have any further questions regarding this item.


SUSAN L. IRONS, Major, USAF
Health Promotion Flight Commander
Offutt Air Force Base, Nebraska

APPENDIX C:
Institutional Review Board Approval



FILE COPY

Institutional Review Board (IRB)
Office of Regulatory Affairs (ORA)
University of Nebraska Medical Center
Service Building 3000
987830 Nebraska Medical Center
Omaha, NE 68198-7830
(402) 559-6463
Fax: (402) 559-3300
E-mail: irbora@unmc.edu
<http://www.unmc.edu/irb>

March 21, 2001

James Reineke
HPER
PO Box 3588
UNO - VIA COURIER

IRB#: 122-01-EX

TITLE OF PROTOCOL: Differences in Value Expectancy and Outcome Expectation Regarding Weight Gain Among Participants in an Air Force Tobacco Cessation Program

Dear Major Reineke:

The IRB has reviewed your Exemption Form for the above-titled research project. According to the information provided, this project is exempt under 45 CFR 46:101b, category 2. You are therefore authorized to begin the research.

It is understood this project will be conducted in full accordance with all applicable sections of the IRB Guidelines. It is also understood that the IRB will be immediately notified of any proposed changes that may affect the exempt status of your research project.

Please be advised that the IRB has a maximum protocol approval period of five years from the original date of approval and release. If this study continues beyond the five year approval period, the project must be resubmitted in order to maintain an active approval status.

Sincerely,

E. D. Prentice, PhD/MD

Ernest D. Prentice, Ph.D.
Co-Chair, IRB

gdk