

AN EXAMINATION OF THE EFFECTIVENESS OF  
WORK-SITE HEALTH PROMOTION PROGRAMS:  
AN "IDEAL" TYPE APPROACH

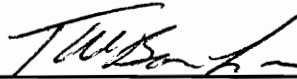
by

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(ABSTRACT)

This study empirically examines the relationship between an ideal health promotion program profile and those actually in existence in the workplace. It is argued that those firms with health promotion programs most clearly matching the ideal profile will perform better than those firms with programs that do not achieve such a match. A hypothesis built on this central proposition is developed and tested based on the Winett, King and Altman (1989) integrative theoretical framework.

Using a National Institute of Health (NIH) secondary data base, which originally contained 1,378 firms, this empirical effort generated the actual health promotion program profiles from a subsample of the available firm data. Tests of the hypothesis revealed some performance implications associated with differences in health promotion program designs.

It is hypothesized that those firms with health promotion programs containing multiple intervention strategies administered at multiple levels of application would perform at a higher level than those lacking in multi-level design configurations. Findings show that the only consistent positive performance implication for deviations from an ideal health promotion program profile was related to employee participation and to a lesser extent turnover. No significant relationships are found for profit. Consistent with other research efforts, longitudinal analysis may be required to evaluate long-term performance measures such as profit and turnover.

This study is the first effort in applying a comprehensive approach to the examination of work-site health promotion effectiveness. Future efforts can now be directed towards longitudinal analysis.

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# CHAPTER I: INTRODUCTION

## An Overview

Health promotion plays an important role in a wide range of employee behaviors. It has been defined in terms of the totality of systematic educational, organizational, and environmental activities designed to support healthy behaviors (Parkinson, 1982). The corporate context for health in the United States is unique because corporations pay a large proportion of health expenditures (Walsh, 1988). Because of the potential for health promotion programs to increase productivity, reduce health care costs, absenteeism and turnover, organizations are motivated to sponsor health promotion programs.

However, these programs have received little attention in the organizational literature. Research on work-site health promotion has been concentrated in health education, health psychology, and public health journals. Despite extensive coverage in the health literature, there is a dearth of methodologically sound research studies (Warner, Wickizer, Wolfe, Schildroth, and Samuelson, 1988). This may

be due to the lack of available data to evaluate program effectiveness (Walsh and Egdahl, 1989).

The following study suggests that in order to evaluate health promotion program effectiveness, an "ideal" model of health promotion needs to be developed. Using the Winett, King, and Altman (1989) integrative theoretical framework, this study develops a model that examines the impact of fit between ideal health promotion program offerings, those actually in existence in the workplace, and program effectiveness.

## HEALTH PROMOTION PROGRAMS

Health Promotion Programs have emerged in the workplace in increasing numbers since the mid-70's (Kar, 1989). These programs represent a broad array of efforts designed to effect behavioral changes and to influence employee health (Conrad, 1988). Eddy, Gold and Zimmerly (1989) report various corporate benefits from health promotion programs such as lower health care costs, absenteeism, turnover and increased productivity.

The current health promotion paradigm assumes that behaviors and lifestyles are central to the onset of chronic disease and thus, health risks can be changed through health promotion (Kronefeld, Jackson, Davis, and Blair, 1988). The work-site has been a popular venue for the establishment of programs that promote employee health (Fielding, 1989). Health Promotion Programs (HPPs) vary in their scope and offerings, from fitness and nutrition, to other popular interventions such as stress management, smoking cessation and health risk appraisals (Levy, 1986; Cohen and Murphy, 1989; Fielding, 1989). Programs may be either on-site or off-site and made available to all employees or to limited groups of workers.

Participation is voluntary, although organizations may offer certain incentives to encourage participation (Conrad, 1988). The workplace is a natural setting for health promotion activities because it offers access to large populations and organizational structures to support health promotion participation (Parkinson, 1982; Kar, 1989). Fielding (1984) suggests that participation is higher in work-site programs than community-based health promotion programs. This may be due to the convenience aspect, especially where employers offer on-site facilities and educational programs (Kar, 1989).

### **Historical Perspective**

Health Promotion Programs (HPPs) are forms of employer intervention that date back to the growth of industrialism in the United States (Shain, 1986). Paternalistic corporate policies in existence at the turn of the century set the pace for the various forms of alcoholism programs, substance abuse programs, and eventually Employee Assistance Programs (EAPs) introduced in the early 1970's (Shain, 1986). Early forms of EAPs and HPPs were somewhat different from those currently offered. They were considered to be benefits offered only to top executives, offered only a limited number of activities, e.g., alcoholism programs and physical fitness programs, and were viewed within the context of

social control (Terborg, 1986; Roman and Blum, 1987; Roman and Blum, 1988). Wilker (1987) points out that programs which are perceived to be paternalistic have become quite unpopular. Health promotion programs today differ from traditional ones in that they offer a wide range of interventions designed to motivate individuals and groups to govern their own health and sense of well-being, rather than focusing on health protection (Fielding, 1989).

The emerging cultural climate of greater health awareness and equality of benefits since the 1970's has given rise to the proliferation of health promotion activities during the 1980's and continuing into the 1990's (Roman and Blum, 1988; Kronefeld, et al., 1988). Spiraling costs in health care during this same period have created a readiness for corporations such as IBM and Johnson & Johnson to participate in health promotion (Conrad, 1988).

IBM Corporation and Johnson & Johnson represent prototypical health promotion programs (Parkinson, 1982). IBM's health education program, called "A Plan For Life," was developed in 1981 to increase health awareness for its employees. The company works closely with community agencies to provide necessary services for employees and their families. Examples of interventions offered by this

program are: health screens, lifestyle awareness seminars, smoking cessation programs, weight control, stress management, fitness, nutritional awareness, and hypertension programs. All programs are free of charge and conducted on company premises. Employee participation is voluntary.

Johnson & Johnson's Live For Life (LFL) has as one of its major goals to restructure its social environment (Holzback, Piserchia, McFadden, Hartwell, Herrmann, and Fielding, 1990). Among the corporate policy issues that have been addressed are: efforts at establishing a non-smoking policy, improvements in the nutritional value of cafeteria foods, incentives, newsletters, and availability of fitness facilities. Longitudinal studies have been conducted since 1979 for treatment and control groups at Johnson & Johnson (Bly, Jones and Richardson, 1986). The analyses of medical claims reveals that the treatment groups had lower rates of increase in medical care costs and utilization versus the control groups. Mean levels of absenteeism among treatment wage earners were also found to be significantly lower versus wage earner control groups (Jones, Bly, and Richardson, 1990). LFL results have been promising and will continue to make excellent contributions to knowledge in the field.

## **The Current Situation and Problem Statement**

Although work-site health promotion programs appear to be becoming a permanent institutionalized feature in many corporations, researchers in human resource management, industrial/organizational psychology, and organizational behavior/development have not yet taken the opportunity to make substantial contributions to knowledge regarding health promotion program effectiveness (Terborg, 1986; Wolfe and Ulrich, 1987; Wolfe and Parker, 1994). The literature on work-site health promotion is presently concentrated in the health literature; the management literature fails to keep pace with this organizational phenomenon (Wolfe and Ulrich, 1987). This lag is important because corporations offer the vast majority of HPPs in existence. Such programs are also being sold as contributors to organization effectiveness, a topic of interest to management scholars. Implementation decisions are often made to improve employee selection and to motivate and retain high performing employees. However, Fielding (1988) points out that there are various practical limitations for conducting work-site studies that would be of interest to management researchers. For example, few employers are willing to randomize subjects which would, in turn, deny benefits to some employees. Also, time lags are involved between program start-up and desired organizational outcomes. Firms are often unwilling to allow researchers to

collect the requisite longitudinal data. This, in turn, creates advancement of knowledge difficulties for the field in general.

The following study is an attempt to bridge the gap between organization behavior/theory literature and health psychology/public health literature. It employs secondary empirical data to advance knowledge about work-site health promotion. The current gap is important because scholars in the field of organization behavior and theory have much to offer from their knowledge of human behavior in organizations (organizational behavior), i.e., attitudes, values, group influences, and organizational systems and structures (organizational theory), i.e., institutional forces, environmental influences, and corporate practices that can help champion positive health related norms which can serve as opportunities and threats to behavior change. Organizational as well as personal issues must be addressed. Thus, research on work-site health promotion could be greatly enhanced by an integration of these bodies of knowledge.

Having briefly discussed the problem, the central research question deals with issues of the Health Promotion Program's potential to enhance organizational effectiveness.



Given the current corporate environment of increased competition both global and domestic, future HPP implementation decisions are likely to be based on research evidence of direct contributions to organizational performance (Wolfe and Parker, 1994). This study examines secondary organizational data which does not require researcher intervention and yet allows interpretations to be drawn from a comprehensive analysis of work-site health promotion programs.

Specifically, a conceptual model of an "ideal" health promotion program profile is created and then compared with actual work-site health promotion profiles to test for performance implications, as a result of profile deviations. The following section describes the conceptual model and discusses variables and relationships.

#### **A CONCEPTUAL "IDEAL" HPP: VARIABLES AND RELATIONSHIPS**

A review of the current literature regarding health promotion programs reveals that the following interventions are likely to be included in an "ideal" health promotion program: nutrition, stress management, fitness, smoking cessation, and health risk appraisals (Fielding, 1989; Green, 1986; O'Donnell, 1986). The term "ideal" is used to describe a particular normative model of work-site health

promotion. Based on the Winett, et al. (1989) strategic framework, these interventions are not considered to be "ideal" unless they are at the same time administered at multiple levels of application. The discussion that follows applies this framework to the goal of developing a theoretical "ideal" approach to work-site health promotion.

### **Intervention Strategies**

There are five interventions considered in this study to be key ingredients in developing a conceptual model of an "ideal" health promotion program: nutrition, fitness, stress management, smoking cessation, and health risk appraisals. A brief description of these key interventions follows.

Nutrition: A major aspect of health promotion programs provides specific information to its participants regarding diet and nutrition. Health risk assessments have indicated that approximately seventy percent (70%) of workers have poor eating habits (Cummings, 1986). According to Scrimshaw (1990), advances in knowledge regarding nutrition have sparked some degree of consensus surrounding nutritional goals that are likely to promote employee health. The 1990

national health objectives also included nutrition as a top priority health issue (McGinnis, 1990). As a result, nutrition is considered by this proposal to be a key ingredient of an "ideal" HPP.

Fitness: The second key ingredient for an "ideal" HPP is fitness. Fitness was also considered to be a 1990 priority health issue for the nation (McGinnis, 1990). Research has shown that proper amounts of exercise can lead to reduced health risk factors associated with chronic disease (O'Donnell, 1986).

### Stress

Management: The third key ingredient for an "ideal" HPP intervention is helping employees to prevent and to cope with the harmful effects of stress. Stress is considered to be a central factor in the etiology of disease (Cwikel and Israel, 1987). Stress was also mentioned as a priority area in the 1990 national health objectives (McGinnis, 1990). Organizational research reveals stress to be a major source

of problematic behaviors in the workplace (Aberth, 1986).

### Smoking

Cessation: Research shows that smoking is among the leading causes of morbidity and mortality in the U.S.; thus, smoking cessation interventions represent the fourth key HPP ingredient (O'Donnell and Ainsworth, 1984). Smoking cessation was also listed among the fifteen priority areas for the 1990 national health objectives (McGinnis, 1990). The National Cancer Institute has advocated a near smoke-free society by the year 2000 (Rothenberg and Koplan, 1990). If this goal is to be achieved, smoking cessation activities are a necessary feature of any corporate health promotion program.

### Health Risk

Appraisals: Health risk appraisals are included as the fifth key HPP ingredient, not because they were included as a national health priority, but because they provide needed health risk feedback to HPP participants and sponsors.

They are also used to evaluate other health promotion program interventions (Alexander, 1988).

Fielding (1988) reports that many "single" risk factor interventions do not bring the benefits expected by employers, and that by combining a number of interventions, synergistic effects can be achieved. Not only is the mix of program interventions a critical element in establishing a theoretical "ideal" model of health promotion programs, but also, equally as important, is the level of analyses at which these strategies are administered (Winett, et al., 1989).

### **Levels of Application**

The multiple levels of application approach is outlined below and includes individual, interpersonal, organizational, and community concerns.

#### **Individual**

**(Personal):** Health promotion at the individual level of application includes such activities as educational programs, health screening, behavioral skills enhancement, and motivational issues (Winett, et al., 1989).

## Interpersonal

(Social): Health promotion at the interpersonal level of application includes such activities as employee support groups and enhanced communication networks concerning health related issues (Winett, et al., 1989). Interventions designed within social networks have great potential for improving and maintaining employee health (Flora, Maibach, and Maccoby, 1989). Health promotion interventions can be designed to involve co-workers, families, and friends in an integrative effort to enhance employee well-being.

## Organizational

(Environ-mental): Health promotion at the organizational level of application includes such activities as educating managerial decision makers on health promotion, developing policies and procedures that support and promote health promotion activities available to families of employees, as well as to the employee. Employer actions also include provisions for

the use of corporate facilities, and incentives for employee participation in work-site health promotion programs (Pelletier, 1986; Kar, 1989; Winett, et al., 1989).

### Community

#### (Insti-

tutional): Health promotion at the community level of application includes such activities as support of community health promotion programs and support of health related laws and policies. Such support can convey messages to employees and to the community that the company is in support of healthy workers.

A comprehensive approach to work-site health promotion suggests that the "ideal" HPP is one that focuses on multiple interventions aimed at multiple levels of application (Winett, et al., 1989). It is important both for employee well-being and organizational effectiveness.

## Performance

Health promotion in the workplace has, to varying degrees, been linked with organizational performance. Eddy, Gold and Zimmerly (1989) report possible targets of evaluation in terms of three factors: direct cost-benefit factors, process and program factors, and subjective factors. Direct cost-benefit factors are those such as reduced health-care costs, increased productivity, and reduced absenteeism and turnover. Process and program factors include employee participation, and behavior change data. Subjective factors are those attitudinal factors such as increased job satisfaction and morale. The scope of this study considers profit and turnover as direct cost benefit performance measures. Participation rates for various intervention strategies are also included as a process and program evaluation measure.

## **Research Model**

The previous sections briefly reviewed the variables and linkages established by the stream of research that examines the impact of health promotion programs at the work-site. Within the context of the health psychology/public health paradigm it was suggested that multiple interventions aimed at multiple levels of



application represents an "ideal" work-site health promotion program (See Figure 1).

A MODEL FOR THE THEORETICAL "IDEAL" WORK-SITE

HEALTH PROMOTION PROGRAM

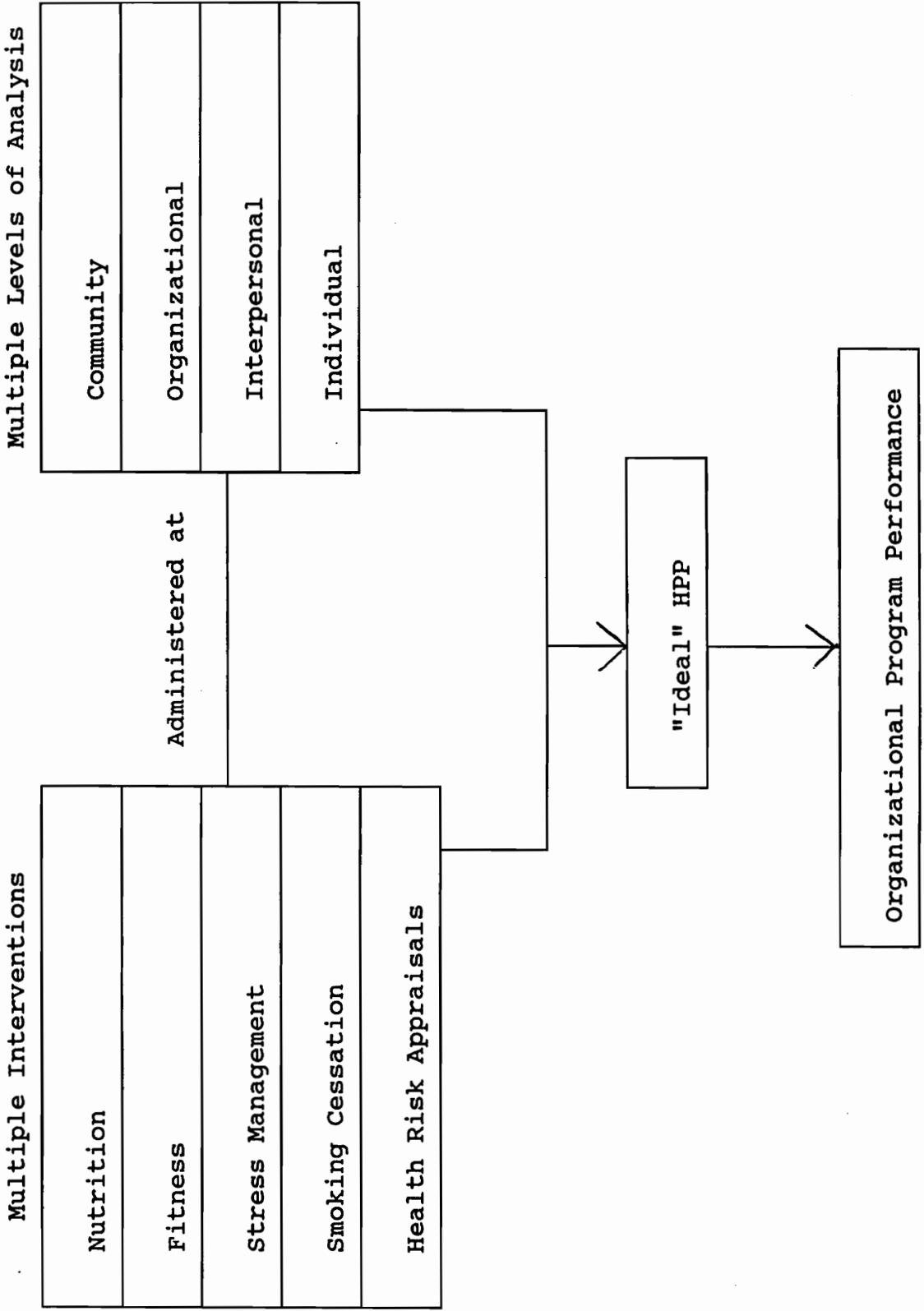


Figure 1

This study suggests that a proper fit between the "ideal" health promotion program and actual programs offered by organizations would have a positive impact on program performance. "Fit" is defined as a match or coalignment between an "ideal" profile HPP, sampled HPPs and performance (Venkatraman and Prescott, 1990). In other words, the more closely the actual program models the ideal program, the greater the program performance. "Fit" is used in this study as resemblance. Health Promotion Programs in the workplace which most closely resemble the "ideal" profile should have a more positive impact on performance than those that less closely resemble the "ideal." This fit relationship is diagrammed in Figure 2 below.

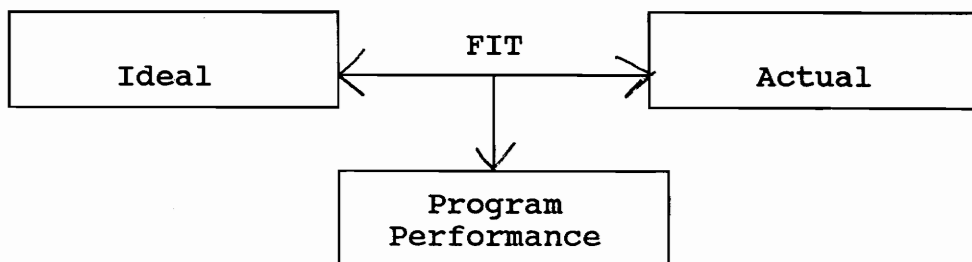


FIGURE 2: "Fit" Model

## **Objectives of the Study**

The major goals of this study are: 1) to apply the Winnett, et al. (1989) strategic framework to work-site health promotion, and 2) to develop from this framework a model which will be used to examine the effectiveness of employer sponsored programs which is important in terms of some validity and reliability concerns cited by the health promotion literature (Roman and Blum, 1988). For example, a construct valid typology of health promotion program activities needs to be developed (Walsh, 1988). By defining the theoretical "ideal" profile of health promotion program interventions and levels of application, this study attempts to develop such a typology. What often has been the case is that what is perceived by some firms as an HPP may not be perceived by others as such (Roman and Blum, 1988). In order to provide some internal consistency among the various work-site programs, a theoretical "ideal" model can be used as a benchmark for program definitions and boundaries.

## **Research Question**

The central research question of the "ideal" HPP profile coalignment and its impact on performance is conceptualized as follows:

For any given firm, if one can specify the health promotion intervention strategies and levels of application needed for program effectiveness, then a deviation from this pattern represents a misfit which should be significantly and negatively related to performance. Testing the research question involves 1) identifying an "ideal" HPP profile through a literature review on work-site health promotion combined with the Winett, et al. (1989) strategic framework and additional contributions from the organizational studies literature, and 2) testing the performance impacts of the HPP intervention strategies/levels of application fit.

### **Hypothesis**

Existing theory indicates that health promotion programs available at the work-site are made up of multiple interventions administered at multiple levels of application. The Winett, et al., (1989) approach posits that this is the "ideal" approach to health promotion. Drawing on the relationships presented in the model and justified in previous sections, it is expected that there will be a relationship between program offerings and program effectiveness. Thus, the following general hypothesis:

H1: Those health promotion programs that achieve a match (fit) between the "ideal" and actual program

offerings will operate at a higher level than those that do not achieve such a match (fit).

### **Industry Selection**

In 1985, the Department of Health and Human Services contracted with the Research Triangle Institute to conduct a survey of private sector work-sites with more than 50 employees to determine the extent and frequency of organizational health promotion programs. The data collected from the National Survey of Health Promotion activities will be used to determine varying levels of performance across firms. This will provide a unique setting for the study.

### **Summary and Review of Subsequent Chapters**

This chapter described the purpose of the research study, outlined the research objectives, introduced variables and relationships, and developed the hypothesis. Chapter Two outlines the major research stream upon which the model is based. Chapter Three presents the research methodology selected for this study. Chapter Four presents the data analysis and results. Conclusions are presented in Chapter Five.

## **CHAPTER II: LITERATURE REVIEW**

### **Theory and Research**

A review of the literature on work-site health promotion reveals that organizations have adopted the ideology of the health movement by establishing HPPs, although a majority of programs still lack a comprehensive "ideal" approach to health promotion (Kotarba and Bentley, 1988; Winett, et al., 1989). The reason for this is, in part, due to the historical segregation of two major fields of knowledge regarding health behaviors, namely health psychology and public health, in addition to the further segregation of the health and organizational literatures (Terborg, 1987; Winett, et al., 1989). The following literature review suggests that health promotion programs designed to positively affect the health behaviors of workers can best be understood by drawing upon four major research streams: health psychology, public health, organizational behavior, and organizational theory.

The ecological approach presented in this chapter seeks to understand health promotion within diverse systems and to provide a balance between individual and social responsibility for health and well-being. It is important

therefore to bridge the current gap between the management and health literatures because both bodies of knowledge have addressed the importance of multi-dimensional views to provide a richer understanding of human behavior.

Most of the research stream generated from the field of health psychology focuses on individual aspects of health behavior. It maintains a rigorous scientific method tradition which delineates a wide range of approaches aimed at changing individual health behavior through attitude and belief change, learning, and motivation (Winett, et al., 1989). The following discussion outlines some of the issues addressed in the health psychology field.

Antonovsky (1984) suggests that life experiences can provide a sound basis for healthy behaviors. In other words, individuals during their socialization develop a "sense of coherence" that provides them with the motivation to cope with life demands. Those who develop a strong sense of coherence (SOC) have the ability to utilize their resistance resources and therefore are more likely to avoid the threats and dangers of disease and illness than those individuals with weak SOC's. Likewise, Kotarba and Bentley (1988) argue that individuals must believe that they have a sense of competence prior to their participation in an HPP.



This is further promoted by Bandura's (1986) theory of self-efficacy, believed to be a key mechanism of individual behavior change. Thus, Winett, et al. (1989) argue that one of psychology's major contributions to understanding health behaviors is its micro-level theoretical approach. This type of approach, which focuses its attention on the individual, is dominant in the health promotion arena. The existence of this phenomenon is apparent in the language used to promote health promotion programming, such as "lifestyle" and "health-behavior" changes (McLeroy, Bibeau, Steckler, and Glanz, 1988). An approach such as this particular type often ignores the organizational and other environmental forces which also shape behavior. This micro-level approach has traditionally been shared by organizational behavior.

Organizational behavior has its roots in psychology, social psychology and classical management science. Pfeffer (1982) maintains that the majority of studies traditionally conducted within the domain of organizations have used the individual as the unit of analysis (Vroom, 1964; Maslow, 1943; Ajzen and Fishbein, 1969). Intangible psychological states or dispositions (needs, values, attitudes, personalities) are assumed to be relatively stable over time

and assumed to determine organizational behaviors (Davis-Blake and Pfeffer, 1989).

This individual difference or dispositional view of behavior has been criticized on the grounds that it ignores the social context of organization behavior, e.g., norms and other forms of social influence (Chatman, 1989; Staw, Bell, and Clausen, 1986; Salanick and Pfeffer, 1978; Davis-Blake and Pfeffer, 1989). The dispositional versus situational view of organizational behavior created a debate in the organizational studies literature that began in the seventies and continued through the eighties and nineties (Salanick and Pfeffer, 1978; Staw, et al., 1986). Salanick and Pfeffer (1978) argued that social information and conformity pressures could better predict job attitudes. As Pfeffer (1982) pointed out, social-psychological variables, e.g., group and conformity pressures (somewhat ironically) had been systematically excluded from much of the organizational behavior literature.

Over time, the organizational behavior research changed to include more contextual variables. Staw, et al. (1986) argued that the field was beginning to err on the side of environmental determinants of behavior at the exclusion of dispositional variables by virtually eliminating the study

of individual variables in organizational research (Hackman and Oldham, 1980; Griffen, 1983). As a result, Staw, et al., (1986) set out to restore the dispositional perspective in the study of job attitudes by outlining research evidence of cross-situational and temporal stabilities. Their empirical study examined the influence of affective states of individuals over time on job satisfaction, and found that data collected during one's early years could predict job satisfaction in later life.

As the debate continued in 1989, the Academy of Management Review devoted an entire volume to the person-situation controversy. With each side juxtaposed, Mitchell and James (1989) reported that a new view had emerged stressing the importance of individuals, situations, and their interactions. This emerging view was further advanced by Chatman (1989) who argued that in order for organizational researchers to fully understand and predict organizational behaviors, they must use an interactionist approach. An interactionist view suggests that behavior is a function of both the person and the environment. In the health literature, these views are referred to as ecological models.

Within the context of health promotion, an ecological model is one that considers multi-level influences operating at multiple levels of application. In these models there is richness in individual as well as contextual variables. While it may be that certain individuals have a predisposition to being healthy, to ignore contextual variables would be allowing organizations to escape responsibility for the system they have created (Green, 1988; Davis-Blake and Pfeffer, 1989). For example, blaming rising health care costs and absenteeism rates on individual dispositions allows managers to commit an attribution error referred to as "victim blaming" (Davis-Blake and Pfeffer, 1989; Hollander and Lengermann, 1988). As such, Wikler (1987) argues that an emphasis on individual responsibility fails to consider social forces which mold behavior and undermines reform ideologies. Additionally, Green (1988) suggests that many work-site programs offer diversions from employer responsibility for health and shift the emphasis toward the worker. He advocates something other than a one-sided perspective towards health promotion. In the health literature, a public health approach offers a more contextual view of health.

Historically, the field of public health has focused on the environmental, social, legal and economic aspects of

health (Winett, et al., 1989). It emphasizes passive strategies and large-scale approaches to health. Its host-agent-environmental model outlines the important interactions between the individual (host), the sources of disease (agent), and environmental factors key to health (Runyan, Devellis and Hochbaum, 1982). Public health advocates assume that to avoid an unbalanced attention to one level of any health problem, both individual barriers to a healthy workforce as well as environmental (organizational) barriers must be addressed. Runyan, et al. (1982) emphasizes that in the extreme, exclusion of multi-directional relationships and environmental influences is neither consistent with public health values, nor is it likely to produce the most desirable outcomes. The implication is that "ideal" health promotion programs involve changes in macro level variables, e.g., organizational policy, as well as individual instruction. Likewise, many perspectives in organization theory have traditionally focused on structural or environmental variables rather than on individual variables (Pfeffer, 1982). Following is a discussion of some of the major issues dealt with in the organizational theory literature.

Structural contingency theory and systems theory have been two of the dominant perspectives of organization theory

in recent times. The structural contingency perspective of organization theory basically argues that aspects of an organization's design depend on aspects of the organization's context (Galbraith, 1973). Situational or contextual factors determine organizational designs that lead to survival and success.

The systems theory perspective views organizations as open systems rather than as the closed systems advocated by classical and administrative science views (Weick, 1976; Thompson, 1967). In the open systems view, organizations are described as interconnected and interdependent with the environment. The environment serves as a reservoir of inputs (financial, labor, technology, to name a few) to the organization which then transforms these inputs into organizational outputs (products and services) delivered then back to the environment. Systems theory not only advocates this notion of interconnectedness with the environment, but also amongst subunits operating within the organization.

The notion of interdependence and interconnectedness between organizations and environments, and around organizational sub-units is in direct concert with the Winett, et al. (1989) strategic framework as applied to

work-site health promotion. Green (1986) criticizes many health promotion efforts for focusing solely on individual or psychological interventions while ignoring social and environmental interventions. The most effective approaches are geared toward the workplace, not just the worker. The inextricable link between individuals and their environments provides a basis for a multidimensional concept of health promotion, which emphasizes the interaction between the individual and the environment (DeLenew, 1988). Winett, et al. (1989) discuss this problem as the need to integrate health psychology principles with public health interventions. There is also a need to draw upon organizational behavior and organizational theory because of their extensive theoretical models and empirical research applied to work-site behaviors.

The Winett, et al. (1989) strategic framework integrates the micro and macro level issues. This framework takes a problem, such as employee health promotion, and simultaneously focuses on individual, interpersonal, organizational, and community concerns. Multi-level intervention programs that extend beyond simplistic individual level solutions include complex environmental solutions. These types of interventions can lead to "radiating effects." Interventions on one level can affect

other interconnected levels (Rappaport, 1987). The analyses is useful not only for program implementation but also for program evaluation. The framework is an important step toward bridging the gap between the health and management literatures regarding work-site health promotion.

## **CREATING THE IDEAL HEALTH PROMOTION PROGRAM PROFILE**

### **PROGRAM INTERVENTIONS**

As stated, the present study is to be conducted in the context of the Winett, et al. (1989) framework. The proposed research focuses on the program effectiveness of an "ideal" program. This "ideal" program includes multiple intervention strategies administered at multiple levels of application. The intervention strategies used in this proposal include: nutrition, stress, fitness, smoking cessation, and health risk appraisals.

#### Nutrition

A major aspect of health promotion programs provides specific information regarding diet and nutrition (Barrett-Connor, 1987). Health risk assessments have indicated that approximately seventy percent (70%) of workers have poor eating habits (Cummings, 1986). Dietary factors have been linked to chronic diseases such as cancer and heart disease (Glanz and Mullis, 1988). The American Dietary Guidelines



recommend changes in American eating patterns to include avoidance of too much fat, cholesterol and sodium, while increasing fiber and food variety (Glanz and Mullis, 1988).

Consistent with the Winett, et al. (1989) strategic framework, Green (1986) points out that a comprehensive versus categorical approach to nutrition leads to the development of healthy diet patterns. That is, nutrition education needs to remove some of the barriers so that individuals can make discoveries about what is best to eat as it relates to their own personal preferences. The industrial setting provides such a context.

Organizations that provide cafeteria/vending areas can enhance nutrition education by providing employees with healthful food choices. Companies may also label foods with a nutritional analysis to enhance employee decision making. Incentives and reinforcements can also be provided in order to encourage appropriate eating habits (Winett, et al., 1989).

Glanz and Mullis (1988) offer an interesting conceptual approach to nutrition interventions that is ecologically based and consumer behavior driven. They point out that the field of marketing, consumer behavior in particular, has a

wide body of empirical research regarding purchasing behaviors. For example, there is some evidence which suggests that consumers like to have vast amounts of information about products prior to purchase although overload can lead to poorer quality decisions. These data could be used, they suggest, in designing work-site program interventions that enable employees to make better food choices, such as point of choice nutrition information in cafeteria/vending areas. Organizational researchers in both management and marketing have a unique opportunity here to collaborate with health psychology/public health researchers in designing effective work-site nutrition intervention strategies.

### Fitness

Among the well-established beneficial effects of physical activity include a reduced risk of coronary heart disease, weight control, and anxiety and depression. Other less established benefits include prevention and control of hypertension, diabetes, and other psychological conditions. Some of the factors which affect workforce participation rates in fitness activities are: socio-economic status, age, sex, proximity to work location, work schedules, costs, and hours of operation. Winett (1986) reports that people often perceive difficulty in reconciling the time demands of

an exercise program with their weekly schedules. This suggests that companies that choose to implement physical fitness programs should consider the influence of social and environmental variables in their program design. Changes in the overall workplace environment are necessary to sustain individual efforts. For example, the question of health facilities is extremely important. Xerox Corporation's management team feels that if a fitness program is located outside the business office, employee participation will be cut at least one-half (Pelletier, 1986). At Pepsi-Co, employees may use the fitness facilities at any time during the day (Pelletier, 1986). Lynch, Golaszewski, Clearie, Snow, and Vickery (1990) report that facility-based corporate fitness programs appear to reduce employee absenteeism rates among participants.

Fielding (1984) reports that regular participation in exercise programs can lead to increases in energy levels, job attitudes, and work performance. In addition, reductions in stress have been associated with work-site fitness programs (O'Donnell, 1986).

### Stress

The stress literature considers stress to be a central factor in the etiology of disease, with social support as

the moderator (Cwikel and Israel, 1987). Over the past decade stress has become a primary concern of businesses (Jaffe, 1986). Changing workforce trends, e.g., the shift from physically demanding to mentally challenging jobs, have forced employers to be concerned about stress management in health promotion programs (Kar, 1989). Workers today tend to perceive stress as an important problem in the workplace. In terms of in-house surveys, Control Data Corporation reports that stress is always at the top of the list (Aberth, 1986).

Most programs primarily focus on the individual without regard to the environmental or social aspects of stress (Hollander and Lengermann, 1988). Traditional programs which emphasize relaxation techniques could benefit from the addition of more comprehensive interventions such as family assessments and company culture audits. For example, stress level can be affected by role conflicts between personal/family demands as well as organizational norms. Thus, employers have begun to explore alternate work schedules (e.g., flextime, job sharing, and compressed work weeks) to allow employees to better cope with these conflicting demands.

## Smoking Cessation

A consistent feature in work-site health promotion programs has been interventions aimed at smoking employees (Fisher, Glasgow, and Terborg, 1990). According to U.S. statistics tobacco smoking is among the leading causes of morbidity and mortality in this country (O'Donnell and Ainsworth, 1984). Following the 1985 Surgeon General's Report on Smoking, smoking risks have become public knowledge as have the economic costs associated with tobacco use. Researchers estimate that smoking employees cost organizations over \$1000 per year more than non-smoking counterparts due to increased health care costs and higher absenteeism (Bibeau, Mullen, McLeroy, Green, and Foushee, 1988).

Cigarette smoking has received a great deal of attention in both the health psychology and public health literatures, although their approaches are somewhat divergent (Winett, et al., 1989). For example, health psychology has focused on the individual and interpersonal issues such as personality, attitudes, and social pressures whereas public health has focused on the political and legislative issues. A comprehensive approach would appear to be ideal in view of the complex issues associated with smoking behavior. In a meta-analysis, Fisher, et al. (1990)

report that smoking cessation programs offering group support and shared employer/employee time for participation have the strongest relationships with quit rates among employees. Short-term issues, however, must also be considered. For example, a 1989 study on the effects of smoking cessation found that recent quitters reported more anxiety, depression, and less job satisfaction than smokers or long term quitters (Manning, Osland, and Osland, 1989). They suggest that organizations consider these short term effects when implementing smoking cessation programs.

Other studies reveal that relapse rates are significant among participants of many smoking cessation programs (Pelletier, 1986). The Winett, et al. (1989) strategic framework suggests that the most effective approach to long term behavior change (smoking cessation) would be to define the problem in a comprehensive manner. This comprehensive focus addresses the issue that smoking behavior is influenced by forces operating at multiple levels of application. For example, corporate policies such as smoking bans and the removal of cigarette machines, incentives, and sanctions against smokers represent an organization's commitment regarding smoking at the work-site (Bibeau, et al., 1988). At the individual and interpersonal levels, skills training and support groups are viable

options to be considered to help employees deal with smoking habits.

### Health Risk Appraisals

Data collected from the National Survey of Worksite Health Promotion Activities reveal that health risk appraisals are utilized by approximately thirty percent of private sector employers (Fielding, 1989). This was cited as second only to smoking cessation activities in terms of overall frequency.

Health risk appraisals are usually computerized and measure employee propensity to risk of specific diseases (e.g., heart disease, cancer, and hypertension) based on certain demographic and family history data, as well as lifestyle behaviors (Fielding, 1989; Alexander, 1988). The results are weighted in order to produce a profile for each participant.

In addition to providing feedback to employees, results from these assessments are often used to plan and to evaluate other types of health promotion activities (Alexander, 1988). While the intent of such programs is to provide a means for discovering risk and improving health, there is some concern about the discriminatory power of such

appraisals, e.g., employees may fear that they will be stigmatized which may affect promotions (Allegrante and Sloan, 1986). Some studies have revealed that results from such appraisals may be grossly inaccurate in terms of predicting high-risk employees (Alexander, 1988).

#### **LEVELS OF APPLICATION**

DeLenew (1988) argues that in terms of health promotion efforts, the whole is greater than the sum of the parts. In concert with the Winett, et al. (1989) strategic framework, interventions, when applied separately, do not appear to render long-term effectiveness (Gould, 1987). An individual's health is determined by a complex set of personal, social, cultural, and environmental factors which must be considered essential issues in developing corporate strategies for health promotion. Thus, health is dependent on individual responsibility, but only within a social context.

The major thrust of this research effort is the importance of multi-level influences of health behavior. Multi-level intervention strategies are expected to be the optimal choice in work-site health promotion efforts because of their radiating effects (Rappaport, 1987). Radiating effects are interventions at any one particular level of



application that have an effect on other levels of application. A second reason for considering this approach as the "ideal" strategy is that effective program implementation and eventual institutionalization is expected to be enhanced through the use of ecological approaches to health promotion (McLeroy, et al., 1988).

### Individual Level of Application

Health promotion efforts geared towards the individual level of application are efforts directed towards increased awareness and knowledge, enhanced healthy skills and behaviors as well as attitude and belief changes (Flora, et al., 1989; Winett, et al., 1989). Awareness and understanding of health problems and health promoting activities is a necessary step in achieving a healthy lifestyle (Flora, et al., 1989).

Knowledge received from educational programs is also a necessary condition for subsequent health behavior change (Flora, et al., 1989). Self-help materials, instructional devices, counseling, and media-assisted instruction are examples of activities designed to change individual knowledge and behavior (Winett, et al., 1989). This awareness, sometimes referred to as health consciousness, may provide researchers with a key element in understanding

individual healthy behaviors which could be enhanced by the activities mentioned here (Gould, 1990). Other researchers have studied individual attitudes toward healthy lifestyles.

Attitudes have long been felt to play an important role in individual behavior changes although there may be other obstacles or moderating factors such as social norms which cause attitude change to be insufficient to change health behaviors (Ajzen and Fishbein, 1969; Flora, et al., 1989). Self-efficacy may be another mitigating influence (Bandura, 1986; Flora, et al., 1989, Winett, et al., 1989).

Self-efficacy is a person's belief in his/her ability to succeed. Winett, et al. (1989) suggest that social-cognitive theory (from which this notion of self-efficacy is drawn) is particularly important in terms of health promotion efforts designed to bring about changes in health behaviors. For example, in order for an individual to believe that he/she can successfully enact a particular set of health behaviors, he/she must acquire a complex set of skills, e.g., cognitive skills to identify nutritional dietary ingredients, social skills to combat peer pressure to eat unhealthy foods, and behavior skills needed to search for restaurants to find proper meals (Flora, et al., 1989). In terms of long-term health behavior change, social-

cognitive theory also addresses the use of incentives, e.g., monetary incentives for smoking cessation, and modeling, e.g., viable modeling of appropriate eating habits. Winett, et al. (1989) suggest that several iterations of these processes may be needed to reach one's final behavior change goal.

### Interpersonal Level of Application

Interpersonal relationships include those relations with families, friends and coworkers, and this level of application focuses on such issues as social supports, social networks, and social connectedness. Studies in the health promotion arena have demonstrated a relationship between social supports/social networks and individual health (Cwikel and Israel, 1987; Israel, 1987).

According to Israel (1987), social support refers to four types of supportive behavior: emotional, instrumental, informational, and appraisal. Emotional support deals with aspects such as affect and concern; instrumental support refers to time and money aids; informational support refers to education and advice; and appraisal support refers to feedback systems. Cwikel and Israel (1987) note that the quality of social support can lead to beneficial effects on health and well-being.

Social networks, on the other hand (Israel, 1987), deal with the structure of the individual's interactions, such as size and frequency of interactions. While certain types of social support and social interactions have been found to be more related to health than others, e.g., emotional, informational support, and the closeness and intensity of someone within the network, successful interventions do appear to require some format for the delivery of such support, such as group interventions (Israel, 1987; Conrad, 1988).

Green (1986), Allen and Allen (1986), and Cobern and Pope (1986) emphasize the importance of group interventions by suggesting that it is the "health norms" of the various subcultures to which an individual belongs, e.g. family, organizations, social groups, and communities, that determine health risk behavior. Thus, they recommend a shift in focus from an exclusive concern with the individual to a concern with the interaction between the individual and his/her support network. More can be done with the concepts from organizational behavior theory and research to support the relationships between social support systems and health.

The study of norms and group influences on behavior can be attributed to the field of social psychology and

sociology. Norms are expected to play an important role in establishing the guidelines of day-to-day behavior, including health behavior. Informal norms merge when people come together for a shared purpose and are introduced and sanctioned via groups (Cartwright and Zander, 1968).

The group intervention format can serve to mobilize role models and social supports, as well as conformity pressures (Walsh, 1988). Conrad (1988) suggests that "fitting in" with the group, or the need for social support, is a critical motivational factor for HPP participation. Allen, et al. (1986) suggest that most work-site health programs have selected specific behaviors for change, (e.g. stress management) in settings where norms are already established for such behaviors. For example, they suggest an analysis of the organizational norms prior to the institution of a health promotion program.

From a public health standpoint, it is incorrect to assume that workers can live healthy lives in organizational settings with norms that run counter to healthy lifestyles (Kobasa, 1982). Groups have the potential for providing increased social network ties and interconnectedness (Conrad, 1988). By providing a forum for the exchange of affective support important to well-being, McLeroy, et al.

(1988) note that interventions administered at this level of application should target social networks for change that encourage undesirable health behaviors, e.g., peers who smoke. When norms are supportive of healthy lifestyles, increases in individual well being appears likely to be enhanced.

### Organizational Level of Application

A healthy organizational structure is proposed to influence individual health behavior, especially when one considers the amount of time people spend at work (Spillman, Goetz, Schultz, Bellingham, and Johnson, 1986). Flora, et al. (1989) developed a set of work-site level health indicators to measure organization healthfulness. Examples are: the information environment, physical facilities, resources, and organizational policies.

The information environment is the totality of communications used to deliver information to organizational members (Flora, et al., 1989). Organizations can enhance the likelihood of healthy individual behaviors by discussions at all hierarchial levels, which may stimulate changes in social norms through health promotion program visibility. Winett, et al. (1989) describe types of organizational information efforts such as developing

communication campaigns and publicized incentives to encourage employee participation. Newsletters and other media influences geared towards organizational health promotion activities would also contribute to the dissemination of health promotion information throughout the organization (Flora, et al., 1989).

The physical environment refers to facilities such as exercise gyms, cafeterias and vending areas designed for healthy eating, and classrooms and other spaces set aside for health promotion activities. As Flora, et al. (1989) point out, the availability of physical facilities at the work-site not only supports health behaviors but is also indicative of the organization's commitment to health promotion since these facilities require substantial organizational resources.

Finally, organizational policies can influence employee health behavior change and maintenance. Policies such as non-smoking work areas, time for exercise, food labeling in cafeterias, incentives, and other policies that reward healthy employee practices have been used by organizations opting to promote a healthy work environment. McLeroy, et al. (1988) suggest that in order for organizations to adopt healthy environments, linkages to other personnel activities

such as daycare services or alternative work schedules can become part of the comprehensive effort advocated by proponents of ecological models of health promotion.

While Flora, et al. (1989) point out that much of the theoretical and empirical research has been devoted to micro level indicators (attitudes, values and beliefs) many believe that organizational factors play an important role in employee health behavior. Spillman, et al. (1986) suggest that managerial support increases employees' beliefs that the organization is interested in their personal welfare. Parcel, Perry and Taylor (1990) argue that without administrative commitment, any health promotion effort is likely to be ineffective. This appears to be one major area where organization behavior and theory can contribute to understanding health promotion at the workplace.

#### Community Level of Application

Winett, et al. (1989) argue that institutionalization is an important factor in long-term health promotion program effectiveness. When health promotion efforts become integrated into organizations and communities, they are said to become institutionalized (McLeroy, et al., 1988). A community is defined in many ways, but is considered here as an area in which people live, or a group of people with



close ties (Checkoway, 1989). Community represents the last set of factors included in this proposal which influence employee health behaviors. Organizations are located within communities which have collective values, norms, attitudes, and public policies that can be used as a resource for work-site health promotion. Through community involvement, work-site health promotion programs can help build support from community leaders and draw from the collective capacity of other organizations within the community to influence and institutionalize employee health.

#### **PERFORMANCE**

Health promotion in corporations has, to varying degrees, been linked with improved morale, increased productivity, reduced absenteeism and turnover, more appropriate use of medical services, and decreased disability and premature death claims due to lifestyles adverse to good health, all of which are advantages of health promotion in the worksetting. However, some costs must also be considered (Hollander and Lengermann, 1988). Initial costs of starting a program as well as the costs associated with demonstrating the long term economic benefits of health promotion are considerable. Information concerning program costs and monetary benefits is lacking in the literature (Terborg, 1986; Warner, 1987; Mullen, 1988).

Katzman and Smith (1989) examined 98 firms presently offering health promotion activities. Results revealed that even though health promotion activities were proliferate, there was a lack of empirical evidence on the part of organizations for measuring program effectiveness. Researchers have noted that the lack of performance data may be due to the relative recency of HPPs and the unwillingness of employers to conduct rigorous evaluations (Aberth, 1986; Mullen, 1988), since acquiring effectiveness data is time consuming. It often involves long term assessment of improved health, changed attitudes, increased productivity and satisfaction. The costs associated with having researchers collect, chart and analyze longitudinal data often hamper the evaluation process, since substantial corporate commitments are necessary (Brennen, 1982; Jones, et al., 1990).

AT&T Communications Company is exemplary in its approach to the issue of program performance (Spillman, et al., 1986). The Company predicts that \$79 million will be saved over ten years through its "Total Life Concept" program (Aberth, 1986). Control Data has been conducting evaluations of its "Staywell" program since 1980, which makes its data base one of the largest to date. In general, researchers have found that employees who smoked, were

obese, had high blood pressure, or did not exercise, cost Control Data more in annual medical claims than their healthy counterparts--sometimes as much as \$900 more per year (Aberth, 1986).

Despite these costs, few companies track the cost and benefits of their programs in a rigorous manner (Mullen, 1988). Warner (1987) notes that the cost effectiveness issue is far more complex than the simplistic evaluations conducted thus far have considered. Effective evaluation often necessitates the use of control groups, such as those used in the Johnson & Johnson's studies, since there is often no way to judge whether the corporate program itself is effective, or whether there are other social and community factors which may explain behavior changes. Because of the possible ethical issues involved with the use of control groups (withholding benefits) most companies refrain from such studies (Cook and Campbell, 1979). Many scholars contest the validity of health promotion because of inadequate methodology and incomplete measurement of performance variables (Mullen, 1988).

Hollander and Lengermann (1988), in a study of firms offering work-site health promotion programs, found it interesting that given the level of commitment of resources

to work-site programs, only a limited amount of evaluation of such programs is actually carried out. This is important in light of the expected relationship between health promotion and various organizational performance outcomes such as employee satisfaction, absenteeism, and turnover (Breslow, Fielding, Herman, and Wilbur, 1990).

Social and institutional forces may account for the legitimacy of such programs (Meyer and Rowan, 1977; Zucker, 1983; Hollander and Lengermann, 1988). While not specifically addressed by this research study, a future research question stemming from the data gathered here would be to examine early versus late adopters to assess the degree of work-site health promotion institutionalization as a possible explanation for the lack of program performance evaluations (Zucker, 1983). In other words, HPPs may have become so institutionalized into the corporate culture that face validity is the only necessary requirement for program sponsorship.

### **Summary**

Chapter II has presented a literature review of the health promotion field. This review has led to the construction of a conceptual model of the "ideal" health promotion program. The centrality of organizational

behavior and organization theory, as well as health psychology and public health, to work-site health promotion. Motivating factors for program sponsorship by organizations has also been examined.

In summary, this study is concerned with the performance impacts of the "fit" between a theoretically generated "ideal" health promotion program profile and those programs actually in existence at the workplace. The central proposition is that the "fit" has significant implications for program effectiveness. Chapter III outlines the research methodology which will be used to empirically test this conceptual model.

## **CHAPTER III: RESEARCH METHODOLOGY**

The goals of this research are to develop and test an "ideal" type model of the relationship between the prototype health promotion program and those actually in existence at the workplace. The primary purpose of this chapter is to identify a framework of methodological choices that will provide an accurate test of the model described.

### **Contingency Perspectives**

Structural contingency theory has been the prevailing study of organizational design and performance since the 1970's (Drazin and Van de Ven, 1985). Recent efforts in the field of organization theory show a continued interest among researchers using structural contingency theory and in determining "fit" relationships (Shoonhoven, 1981; Van de Ven and Drazin, 1985; Gresov, 1989; Venkatraman and Prescott, 1990; Thomas, Litschert and Ramaswamy, 1991; Pennings, 1992). "Fit" is the key concept used in contingency propositions (Van de Ven and Drazin, 1985). Several studies have shown that "fit" is related to organizational performance (Fry and Smith, 1987; Alexander and Randolph, 1985; Gresov, 1989). While a "true" contingency approach would take exception to the one-best

way or "ideal" type proposed by this study, some important contingency propositions and empirical studies are used to develop the methodology discussed below.

For example, Venkatraman and Prescott (1990) describe the two dominant approaches to "fit" or "coalignment" (as the concept is also referred; see Thomas, et al., 1991). The first approach, one most commonly used in traditional organizational research, is the reductionistic view. This approach is based on the underlying assumption that the "fit" or "coalignment" between two constructs, e.g., HPP components and levels of application, can be understood in terms of interactions among the individual program dimensions symbolizing the two constructs.

For instance, certain dimensions of the HPP program components and levels of application can be examined univariately to assess the performance implications of "fit." This reduction approach focuses on the association among small sets of variables such as fitness programs and organizational level indicators and assumes that these variables are independent of one another (Venkatraman, 1989). In contrast, the holistic approach to "fit" focuses on the interdependencies amongst all variables.

The holistic view has been coined by Venkatraman and Prescott (1990) as the new contingency approach. Its purpose is to simultaneously describe a number of variables that retain the complexities of certain organizational relationships. This approach requires multivariate analysis to characterize these fundamental interdependencies (Drazin and Van de Ven, 1985). As such, the connection among all HPP program components and levels of application can be examined at the same time to assess their impacts on performance.

Drazin and Van de Ven (1985) argue that these views of "fit" are not mutually exclusive. A researcher can, in other words, develop more knowledge by examining both forms of "fit" in a single research study than would be possible using one approach alone. Venkatraman (1989), on the other hand, warns researchers of a triangulation trap that may ensue from conducting multiple tests of fit. This trap may occur as the researcher seeks convergency among tests. For example, while convergence from the holistic and reductionistic approaches to fit could provide evidence of robustness of the model any non-convergent results do not necessarily imply lack of robustness since each theoretical statement may have its own appropriate measurement approach (Venkatraman, 1989). The key issue in the decision of



whether or not to permit comparative evaluations of "fit" within a single research design would appear to lie with the researcher and his or her ability to theoretically justify the usefulness of the combination methodology for the particular theoretical model.

Building on the prior discussion, the theoretical argument proposed here is that the holistic view of "fit" provides the best direct test of the Winett, et al. (1989) model, based on its central thesis that multiple intervention strategies administered at multiple levels of application create the "ideal" health promotion program. From the standpoint of practical utility, some components of the model may be more directly related to an organization's performance than are others. Of particular interest to organizations that are contemplating the adoption of an HPP, these results would contribute to decision making with respect to specific program components. Two approaches are used in this study to examine practical utility.

First, a panel of experts in the field of health promotion have been asked to weigh the health promotion program components (health risk appraisals, smoking cessation, fitness, nutrition, and stress management) in terms of their importance to profitability, turnover, and

employee participation. According to the panel results, smoking cessation programs are believed to have the greatest impact on profitability, and stress management programs are believed to have a greater impact on profitability than fitness, nutrition and health risk appraisals. In terms of turnover, fitness programs and smoking cessation programs are believed to have a greater impact than the other intervention strategies. Finally, health risk appraisals are believed to have the greatest impact on participation rates of employees, with the other interventions weighted approximately equal (See Appendix B).

Venkatraman and Prescott (1990) point out that the assumption of equal importance is often difficult for the researcher to justify, which creates limitations in operationalizing health promotion as a vector of standardized scores. It may be unlikely that all variables are of equal importance. To deal with this limitation, the panel of expert weights will be used to employ differential weights for each of the intervention strategies and their relative effects on the dependent variables (profitability, turnover and participation rates). Thus, the HPP intervention strategies will be operationalized as a vector of scores representing the relative importance of each intervention activity. Secondly, the reductionist approach

will be used to examine each intervention strategy and level of application variable separately on the dependent variables (profitability, turnover and participation) to establish whether some components of the model are more directly related to performance than others.

Venkatraman (1989) suggests that this can be of extreme usefulness to many organizations, especially those operating in recessionary environments or with limited resources. Here, efficiency may drive the organization to fund limited HPP components and/or programs targeted towards certain levels of application. Thus, this study seeks to maximize the theoretical and practical value of the proposed study by using multiple forms of fit to test the research model.

### **Research Setting and Data Collection Methods**

This study attempts to utilize the data collected from the National Survey of Worksite Health Promotion Activities, conducted in 1985, to empirically test the Winett, et al. (1989) model outlined in Chapter II. The analysis conducted thus far by other researchers, from the data base has included descriptive statistics of program interventions which corresponds with the program interventions and levels of application presented in the research model (Fielding, 1989).

A comparative approach, such as the one used here, is recommended as part of a programmatic effort in the cumulative evaluation of work-site health promotion programs (Green, 1986). The National Survey surveyed a random sample of all private sector firms with fifty (50) or more employees (Fielding, 1989). The sample is stratified by number of employees, geographic location and industry type. The instrument itself consists of several sections including demographics of the workforce, position of respondents, types of health promotion interventions offered, as well as multi-level intervention issues. Telephone interviews were conducted using Research Triangle Institute's Computer-Assisted Telephone Interview System (CATI). Results reveal that 65.5 percent of the respondents have at least one health promotion activity. Among the frequently cited interventions are smoking cessation, fitness, weight control, stress management and health risk assessments (See Appendix C).

### **Sample**

As mentioned earlier, the target population for the survey included all private sector work-sites with 50 or more employees. Christenson and Kiefhaber (1989) report that this includes more than half of the workforce. The Dun and Bradstreet list of corporations was purchased by the

researchers and used to identify these work-sites. Once sites were randomly selected, they were assigned to an interviewing list until a desired number of respondents had completed the questionnaire. Data were eventually obtained from 320 work-sites with 50-99 employees and 1,038 work-sites with 100 or more workers (Christenson and Kiefhaber, 1989).

## **Operationalization of Constructs**

### **I. Levels of Application**

- Individual - At the individual level of application, indicators of application would include self-help health educational programs, personal health assessment, counseling, motivational activities, and skills training (Winett, et al., 1989). For example, the National Survey includes items regarding health risk screenings such as blood pressure readings, or other tests of physical fitness. Other items of significance include questions about individual counseling offered to smokers wishing to quit and other forms of self-help materials provided to employees regarding various interventions such as nutrition, fitness, stress, and smoking.

- Interpersonal - At the interpersonal level of application, indicators of social networking and support would include: employee support groups, competitions to facilitate participation, and utilization by families of health promotion activities (Winett, et al., 1989; Brownell and Felix, 1987. For example, the survey data base contains specific information regarding the prevalence of group workshops, incentives, walking clubs, special events such as exercise competitions, or other innovations to promote worker participation. There is also information pertaining to eligibility for health promotion activities to dependents and retirees.
- Organizational - Hollander and Lengermann (1988) examined organizational support for work-site health promotion in terms of the following indicators: whether company time or employee time was used; whether the company or the employee pays for the activities; and types of personnel who staff the health promotion program. Other indicators would include newsletters, health communication campaigns, policies that promote health, and incentives

that reward employee participation (Winett, et al., 1989). The National Survey includes indicators of organizational level of support with responses from firms about on-site versus off-site availability of facilities, cost of participation, on-company time offerings of interventions versus on-employee's time offerings, and other company policy types of responses.

Other examples of organizational support include attempts to change the organizational environment to help employees experience less stress, healthy food choices in cafeteria/vending areas, existence of a smoking policy, and informational materials offered to employees through campaigns, newsletters, posters, or other media channels. Firms were also queried about top management support and funding provided to health promotion activities.

- Community - Indicators at the community level of application include: utilization of the mass media as well as cooperative efforts with community leaders, policy makers, and other

organizations (Flora, et al., 1989; Winett, et al., 1989; Goldstadt, Simpson, and Loranger, 1987). For example, the National Survey contains responses from firms regarding methods to promote and advertise activities. It also contains questions regarding community referrals and subsidized memberships to community organizations. Firms were asked to specify which outside (community) organizations such as hospitals, public health, or other governmental agencies were involved. Affirmative responses would indicate involvement at the community level of application.

These indicators are used to develop the levels of application portion of the "ideal" health promotion program profiles and sample HPP profiles used in this research study. Types of intervention strategies are another important ingredient for developing HPP program profiles.

## II. Program Interventions

Wolfe, et al. (1987) provide a typology to identify health promotion program interventions as opposed to other corporate activities such as Employee Assistance Programs (EAPs) and recreational activities. The National Survey



data uses a similar approach. For example, firms were questioned about the frequency of interventions to distinguish between one-time component offerings and continuous health promotion activities. General program characteristics have been identified to distinguish between health promotion activities and other recreational or Employee Assistance Programs (EAPs).

Each of the five (5) intervention strategies most commonly mentioned in the literature and proposed herein to be components of the "ideal" health promotion program are also included in the activities section of the National Survey data base: health risk appraisals, smoking cessation activities, exercise and fitness, nutrition, and stress management. Within each of the activity sections, specific information about levels of application issues is contained.

### III. Performance

As previously stated, possible dependent variables include three factors: direct cost-benefit factors, process and program factors, and subjective factors (Eddy, et al., 1989). Direct cost-benefit factors are those such as reduced absenteeism and turnover, reduced health-care costs and increased productivity. Process and program factors include employee participation, attitudes toward the

program, and behavior change data. Subjective factors are those such as increased job satisfaction and morale. Wolfe, et al. (1987) concur that current theoretical underpinnings and research exist for the linkages between implementation of health promotion programs and employee/work related outcomes. This study uses employee turnover and profitability as the dependent variables direct cost-benefit indicators of organizational performance. Employee participation, as a process and program evaluation factor, is also used as a dependent variable.

### **Statistical Analysis**

Previous research using "fit" hypotheses can be classified into two basic perspectives: a) the holistic; and b) the reductionistic (Venkatraman and Prescott, 1990). The holistic perspective views "fit" in terms of multivariate relationships, while the reductionistic perspective views "fit" in terms of bivariate alignments. These two approaches to "fit" suggest different analytical methods (Venkatraman and Prescott, 1990).

### **Holistic Approach**

Within the holistic view, Van de Ven and Drazin's (1985) profile deviation or systems perspective has been shown to be a pertinent form of analysis for models

involving design patterns such as the one proposed here (Gresov, 1989). Its usefulness lies in its ability to recognize the multivariate deviation in the pattern of a firm's HPP profile from an "ideal" profile.

"Fit" is conceptualized by the profile deviation or systems approach as the degree of correspondence of an actual organizational HPP to a theoretically or empirically specified "ideal" HPP profile (Van de Ven and Drazin, 1985). As the correspondence to the "ideal" profile increases, so should program performance, and vice versa. In other words, those organizations adopting profiles consistent with those defined by the "ideal" should show higher performance and vice versa, e.g., greater deviations from the "ideal" profile imply lower levels of performance. This approach is greatly dependent on the researcher's development and justification of the "ideal" profile (Venkatraman and Prescott, 1990).

Figure 3 provides a graphical explanation of the holistic approach to "fit." This is the most direct test of the Winett, et al. (1989) model, due to its multivariate nature. As Figure 3 illustrates, for any given firm's HPP, if the researcher can specify the necessary "ideal" profile, then deviation from this pattern profile represents a

"misfit" which should be negatively related to performance. The greater the "misfit," the lower the expected performance (Gresov, 1989).

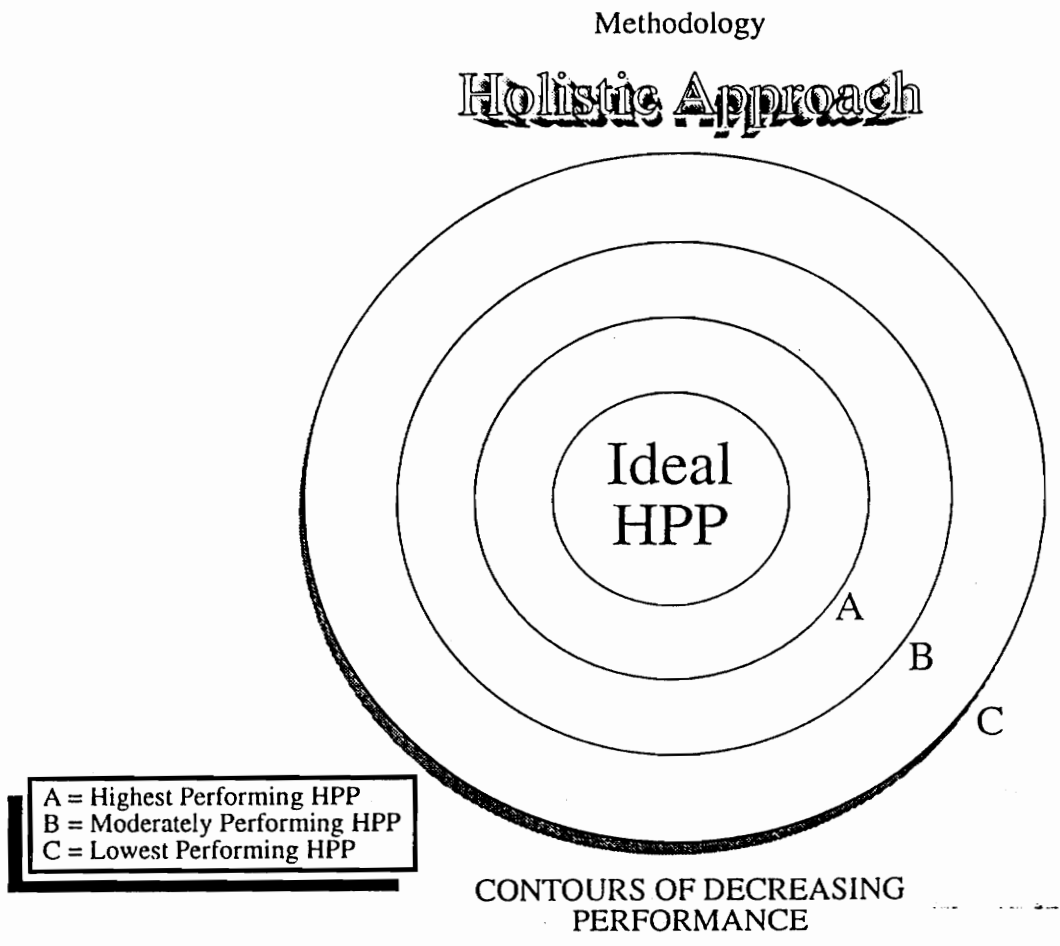


Figure 3: Adapted from Drazin and Van de Ven (1985)

There are several steps involved in the implementation of the profile deviation or systems approach to "fit" (Van de Ven and Drazin, 1985; Gresov, 1989; Venkatraman and Prescott, 1990; and Thomas, et al., 1991):

- 1) Creating the "ideal" profile. According to Van de Ven and Drazin (1985), the "ideal" profile can be generated either theoretically or empirically from high performing organizations. Prior studies have all used an empirically generated ideal profile by calibrating the top performers of the study sample (Drazin and Van de Ven, 1985; Gresov, 1989; Venkatraman and Prescott, 1990; and Thomas, et al., 1991). Researchers typically select this method for convenience, due to the difficulties involved in operationalizing a theoretical "ideal" profile with numerical scores (Venkatraman and Prescott, 1990).

Since this particular study is designed to test a specific theoretical model, a coding scheme is devised whereby each dimension of the "ideal" HPP is assigned a numerical score. This approach is considered to be theoretically generated. Because of the descriptive nature of the data, values of zero (0) and one (1) are used to create the "ideal" profile.

For example, the "ideal" HPP is illustrated in terms of the following matrix whereby the existence of a particular HPP component/indicator is assigned a value of one (1) and the non-existence of a particular component/level of application is assigned a value of zero (0). Levels of application indicators are developed through a coding system designed by the researcher (See Appendix A).

#### HPP Components/Levels of Application

	Program	Individual	Inter-personal	Organizational	Community	Total Intervention Components
Health Risk Appraisal	1*	7	1	16	4	28
Nutrition	1*	2	2	18	4	26
Fitness	1*	2	2	16	5	25
Smoking Cessation	1*	3	3	17	4	27
Stress Management	1*	2	2	16	4	25
Levels of Application		Total Ind. 16	Total Int. 11	Total Org. 83	Total Com. 21	
*Existence of the intervention strategy					Ideal Score	132* *Included

The "ideal" profile can be summarized a vector of scores along all program components and level of application variables. As indicated in the above matrix, the "ideal" HPP receives a value of 132. The sampled HPP design patterns could range in values from

0-132. The data set contains all information from which to create the sample vectors.

- 2) Program design comparison. The sampled health promotion design patterns are then compared to the "ideal" program design configuration. Deviation is actually calculating "misfit" (Gresov, 1989). The greater the deviation of the sampled design pattern from the "ideal" profile the greater the degree of "misfit."
  
- 3) Correlation with performance. The test of "fit" is complete when the deviation scores are correlated with performance. This involves testing the significance of the zero-order correlations between "misfit" and the dependent variables (turnover, profitability and participation) for each of the HPPs in the study sample. The "fit" proposition is supported if the correlation coefficient is negatively and significantly different from zero. The greater the misfit between the "ideal" HPP profile and the actual profile, performance declines, and the model is supported.

Venkatraman and Prescott (1990) report that this procedure is a necessary, but not sufficient condition to

the determination of "fit" because the power of the test is unknown; thus, they argue for the classification of a baseline chance model to provide additional support for the power of the holistic model. The baseline chance model is developed to answer the question of the likelihood of a statistically significant zero-order correlation when misfit is calculated as the deviation from a baseline chance HPP profile rather than a theoretical "ideal" HPP profile.

The baseline profile would be developed using a random set of intervention variables and levels of application the baseline chance profile based on non-critical variables, e.g., back care education and hypertension. The expectation would be that these variables would have a lesser impact on performance resulting in a stronger likelihood of robustness of the model (Venkatraman and Prescott, 1990).

### Reductionistic Approach

The reductionistic approach to fit is conceptualized in terms of the "fit" between two constructs rather than the multivariate alignment specified above (Venkatraman and Prescott, 1990). This view is based on the assumption that the bivariate alignment between two constructs, e.g., HPP components and levels of application, can be understood in terms of the pairwise "fits" among the individual dimensions



that represent the two constructs. For example, certain program components, such as stress or nutrition, and certain levels of application, such as individual or organizational, can be examined separately to assess performance implications of "fit." These testing approaches decompose the system of relationships between HPP components and levels of application into distinct variables (Venkatraman and Prescott, 1990).

A common type of statistical analysis used by researchers in testing the reductionistic approach to "fit" is an interaction approach using the computation of residual score deviations from a regression line. Figure 4 shows a graphic illustration of this technique. This requires a two-step procedure (Drazin and Van de Ven, 1985):

- 1) Construction of deviation scores. Each program dimension is regressed separately on each level of application to calculate the best fitting least squares lines. The absolute value of the residuals are then used as deviation scores.
- 2) The test of fit. The deviation scores are then separately regressed on the performance variables. If

the scores are negative and significant, then the fit proposition is supported.

#### Methodology

### Reductionistic Approach

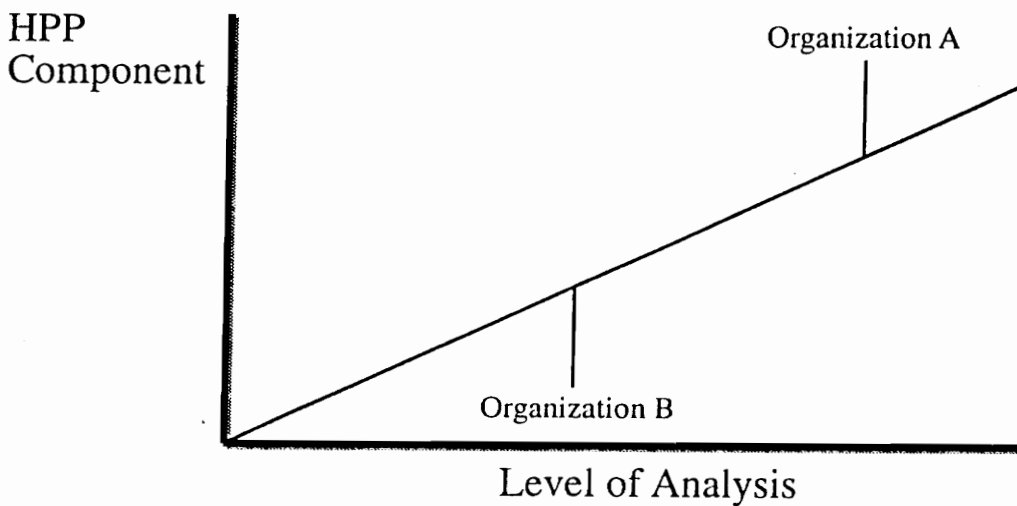


Figure 4 (Adapted from Van de Ven and Drazin, 1985)

With categorical data however, the reductionistic approach suggests the above cannot be used to analyze the interventions and levels of application. Regression analysis requires interval data in order to determine the best fitting least squares line. Therefore, the same statistical techniques used to test the holistic model are also used to test the bivariate relationships in this study.

## **Hypothesis Testing**

The hypothesis stated that health promotion programs that "fit" the theoretically determined "ideal" pattern of design would be positively related to program performance, while deviations from the "ideal" design, or "misfit," would be negatively related to program performance. As previously discussed, this hypothesis can be tested by creating theoretically generated "ideal" health promotion program profiles from which to measure program deviations.

The second step is to calculate the measure of fit or "misfit" with these "ideal" profiles. This is to be done using the systems approach to statistically calculate "fit."

The resulting measure of fit is then correlated with program performance (in both the total model and the bivariate relationships) to test the hypothesis that the closer the resemblance to the ideal, the higher the performance, and that deviations from the ideal result in lower performance.

If systems results are significant, but bivariate results are not significant, then the researcher may infer that "fit" does not occur at the level of any individual HPP variable, but rather "fit" occurs at the level of the

overall pattern of multiple variables (Drazin and Van de Ven, 1985). This is the central thesis of the Winett, et al. (1989) model, that multiple intervention strategies administered at multiple levels of application represent the "ideal" HPP. If, on the other hand, the bivariate approach detects "fit" among certain pair-wise relationships and the systems approach does not, then the researcher may reasonably conclude that some dimensions are better predictors of performance than are others.

### **Summary**

This chapter outlined a methodology for testing the hypothesis. The combination of the total model and bivariate analysis may be particularly useful in the future development of construct valid typologies of HPPs and for any organization contemplating HPP sponsorship. On the other hand, if both tests of fit are significant, then the researcher has triangulation of methods with richer empirical results. Data collection techniques and operationalizations of constructs were presented. Data analysis and results are discussed in the following chapter.

## CHAPTER IV: DATA ANALYSIS AND RESULTS

The preceding chapters outlined a research model that extends the literature in the field of health promotion. A testable hypothesis was proposed and two distinct approaches were presented to test the hypothesis. First, the Van de Ven and Drazin (1985) systems approach is employed to test the overall model, i.e., greater actual HPP deviations from an ideal profile consisting of multiple interventions aimed at multiple levels of application would be expected to be related to lower profitability, participation in programs, and higher turnover. Secondly, bivariate associations are explored. Each intervention strategy and level of application variable is examined to determine if any one intervention strategy or level of application might be more important than another in terms of its impact on each dependent variable. This second approach is primarily conducted for the purposes of practical utility; however, if results are similar and consistent with the overall model, then triangulation of approaches can be inferred offering richer empirical results.

Because of data constraints (categorical data) it was outlined in Chapter III and further emphasized here that the

same statistical techniques are used in both the total model pattern deviation approach and in the bivariate approach, taking away somewhat from triangulation inferences.

Chapter III also described data collection techniques. The purpose of this chapter is to present the findings obtained from an empirical test of the above mentioned model.

### **Describing the Data**

In order to analyze the NIH data base, it was necessary to sort the data in a variety of ways. First, only those firms with intervention strategies were examined. Table 1 reveals the sample size for each intervention strategy.

Second, the total profile deviation model required that the separate intervention samples be merged. Because of missing data, the statistical package (SAS) required that only those firms with intervention strategies across all categories be used in the overall model. This provides a total model sample size of 274 firms (See Table 1). As a note to the reader, an analysis was performed to test whether those firms with no HPPs or with one to four intervention strategies would differ in performance implications from those with all five intervention

strategies. It was found that those firms with more intervention strategies had less turnover. No significant relationships were reported for profit.

This sample was found to be representative, however, of the population. That is, the original data base contained 65 percent small firms, 26 percent medium-sized firms, and 9 percent large firms. The sample in this study includes 60 percent small firms, 29 percent medium-sized firms, and 11 percent large firms, consistent with the population sample.

The data from firms listed in Table 1 were then used to calculate overall deviations and deviations for each intervention strategy and level of application along with the weighted analysis, as obtained from the panel of experts survey (See Appendix). These deviations were used in the analysis to test the degree of fit with the dependent variables turnover and profit. It should be noted that profit and turnover are cost/benefit outcomes expected to accrue to firms with HPPs, while participation rates are considered to be measures of program effectiveness.

It was necessary to examine participation rates for each intervention strategy and for the total health promotion program. Participation rates are operationalized

as the percentage of employees participating in the HPP. Again, in order to deal with missing data, only those firms with participation rate data across all intervention strategies were analyzed. Table 1 also reveals the sample size for each intervention strategy including participation rates. This results in a reduction of the sample size (See Table 1) to 128 firms.

Finally, to account for the effects of firm size, separate analysis was required for small, medium and large firms. Summary Table 2 reveals the number of employees, intervention strategies and number of firms included in each analysis.

## **Measurement and Control**

### **• Construct Validity**

A coding system was developed to analyze the data in accordance with the hypothesis set forth in Chapter III. The researcher made coding decisions regarding those questionnaire items to be included particularly in the levels of application constructs. For example, an item such as, "does your firm offer individual counseling sessions on how to manage stress?" would be coded as an individual level of application indicator for the stress management intervention strategy. An expert rater in the field of



health promotion was also asked to make decisions regarding the coding system. Decisions made by each of the raters were then compared and revealed high levels of consistency in classification. Rater responses are included in Appendix D.

- Internal Validity

A baseline chance model was created to deal with issues of internal validity. The original data base contains intervention strategies not predicted by the model to relate to the dependent variables turnover, profitability, and participation. Table 2 reveals the intervention strategies and sample size included in the baseline chance model.

The baseline chance model was discussed in the preceding chapter as a means for determining the statistical power of the holistic model. It was suggested that a baseline chance profile would be created using randomly selected intervention strategies and levels of application variables combined with non-critical intervention variables. Upon further examination of the issues, it was determined that a slightly altered approach would be required.

For example, the baseline chance method was first introduced by Venkatraman and Prescott (1990) to answer the

question of what is the likelihood of obtaining a statistically significant negative correlation when MISFIT is calculated as deviations from a baseline profile as opposed to the profile of a calibration sample. As with other studies, empirically generated ideal profiles have been the norm due to the inherent difficulties involved with operationalizing theoretically generated ideal profiles (Gresov, 1989).

With this particular study, however, it was determined that since the ideal profile was theoretically generated, it was necessary to also create a baseline chance model with theoretical non-critical variables. Upon examination of the model and of the available data, it was determined that only a few of the intervention strategies cited in the original data base could be described as non-critical variables. All levels of application variables are critical. Thus, the approach outlined in the previous chapter was modified to deal with the fundamental assumption of non-criticalness. It is also important to note that the method outlined by Venkataman and Prescott (1990) was not meant to be a generic blueprint for developing the baseline chance model. In fact, they conclude that the approach chosen by the researcher should simply be logically defensible and consistent with the theory. In this regard, the bivariate

approach was chosen as the test for internal validity. That is, two non-critical intervention strategies, backcare and weight control, were selected for separate analysis to test whether it should be demonstrated that the correlation coefficient derived from the deviation scores of the ideal interventions is significantly higher than a coefficient derived from the baseline chance profile. It should be noted that this is an exploratory story for the use of theoretically generated ideal profiles.

#### Test of the Hypothesis

The reader will recall that the hypothesis is:

Those firms that most closely match (fit) the ideal profile of a health promotion program will perform at a higher level than those that do not achieve such a match (fit).

Due to the exploratory nature of this proposal, the researcher chose  $p < .10$  as the decision rule for hypothesis acceptance. The coding system (See Appendix A) was used to develop theoretically generated ideal profiles for each intervention strategy and level of application construct as determined from the literature review. Table 3 reveals the ideal profile for each intervention strategy and each level

of application construct included in the model. Table 3A presents ideal profiles for the baseline chance model. It should be noted that all mean deviations presented in the analysis herein are mean deviation scores from these ideal profiles.

There were two distinct methods suggested in Chapter III to test the above hypothesis. First, was the overall pattern deviation approach. The second approach involved separate analysis of the intervention strategies and levels of application, respectively. A description of the data derived from these two approaches follows.

The reader will recall that because of data constraints, the interaction approach could not be used to analyze the bivariate fits for the intervention strategies and levels of application. All data for intervention strategies and levels of application variables are categorical. Regression analysis requires non-categorical data in order to determine the slope and intercept of a best fitting least squares line. Due to these constraints, the bivariate fits were examined using the same profile deviation approach employed in the total model pattern analysis.

It should be noted that the model calls for a calculation of misfit. Therefore, significant results should be negatively correlated with the dependent variables. This would be the case for participation. With profit and turnover, however, misfit would occur as profit and turnover increase resulting in significant correlations being positive. Profitability was measured on a scale from 1 to 5. It should be noted that this scale is reversed; that is, the lower the number, the higher the level of profitability. Turnover data ranges from 0-100. This means that the minimum number of employees who have left any given organization is zero and the maximum is one hundred employees.

Typically, turnover is measured as a turnover rate (the percentage of employees who have turned over) in any given time period. Because a calculation of turnover rate requires dividing the turnover data reported here by the number of employees, this calculation alone would result in approximately a fifty percent reduction in sample size. As a note to the reader, the deviation scores were also analyzed using turnover rate as the dependent variable and these analyses revealed consistent results with a few exceptions. In the analysis of small firms, the nutrition deviation scores were significant with turnover calculated

as a number of employees, while these deviations were non-significant with turnover calculated as a percentage of employees. This was also the case for large firms in the total model pattern analysis and the baseline chance model with backcare as the non-critical intervention.

In some cases non-significant results reported with turnover calculated as number of employees became significant when turnover rate was used as the dependent variable. The deviation scores for fitness and weight control in the analysis of medium-sized firms and the stress management deviation scores for large firms fall into this category. All other results remained unchanged.

#### Pattern Analysis: Total Model

Tables 4A and 4B present means, standard deviations and zero-order correlations for the variables included in the total model pattern analysis. These tables include weighted (Table 4A) and unweighted (Table 4B) analyses of the intervention strategies/level of application correlated with profit and turnover as outcome variables. The results show that there is no significant relationship between deviation from an ideal HPP and actual HPPs across all firms. This fails to support the hypothesis that those HPPs that most closely resemble the ideal will positively impact on profit

and turnover. Tables 4C and 4D present analyses of the total model including participation rates. It should be noted, however, that both the weighted and unweighted models do reveal a significant relationship with participation rates as the dependent variable, providing support for the hypothesis.

#### Pattern Analysis: Intervention Strategies

Table 5A presents means, standard deviations and zero-order correlations for each intervention strategy variable correlated with the outcome variables: profit and turnover. Results reveal a significant relationship demonstrated between the deviation scores of the smoking cessation intervention strategy, the fitness intervention strategy, and the stress management intervention strategy and turnover as the dependent variable, providing support for the hypothesis. No significant relationships are reported for profit. This would suggest that certain interventions are more important than others with respect to their impacts on turnover although the strength of those reported relationships are small.

Table 5B presents means, standard deviations and zero-order correlations for each intervention strategy correlated with corresponding participation rates in each intervention

strategy. Because this is a subsample of those firms included in Table 5A, profit and turnover correlations were analyzed here to examine the effects from firms reporting participation data. Results reveal a significant relationship between each intervention strategy and their respective participation rates providing support for the hypothesis. This analysis provides triangulation of methods since the total model results correspond with the intervention results.

#### Pattern Analysis: Levels of Application

Table 6 presents means, standard deviations and zero-order correlations for each level of application correlated with profit and turnover. Results show no significant relationship between levels of application and these outcome variables. Table 6A presents participation rates with significant results at the individual level of application for participation in fitness and nutrition; at the interpersonal level of application for nutrition and total participation across all programs; at the organizational level for health risk appraisals, fitness and total participation across all programs; at the community level of application for smoking cessation programs. Again, when participation is used as the dependent variable, greater support for the hypothesis is shown.



### Pattern Analysis: Total Model for Small Firms

Tables 7A to 7D present means, standard deviations and zero-order correlations for the variables included in the total model pattern analysis for small firms. Table 7A includes an unweighted analysis of the intervention strategies/level of application correlated with profit and turnover as outcome variables. Results show no significant relationships between deviation scores of HPP programs when profit and turnover are used as outcome variables, failing to support the hypothesis. Table 7B shows the weighted model pattern analysis with no significant results. Table 7C which reports the unweighted results including participation reveals a significant relationship between total deviation from an ideal HPP profile and total participation across all small firms. The weighted model shown in Table 7D also reveals significant results between the total deviation for participation and total participation in HPP programs across all small firms. This would imply that participation is important regardless of the weights assigned to intervention strategies by the panel of experts. It should be noted that small firms represent the greatest number of firms in this sample; thus, one would expect similar results for both small firms and the analysis of all firms.

### Pattern Analysis: Intervention Strategy Analysis of Small Firms

Tables 7E and 7F presents means, standard deviations and zero-order correlations for variables included in the intervention strategy analysis for small firms. Results show a significant relationship between turnover and deviation from the ideal profile of each intervention strategy (See Table 7E). No significant relationships are reported with profit as the outcome variable.

Table 7F reveals results for the intervention strategy analysis of small firms including participation rates. Results show significant relationships between deviation scores and participation rates for all intervention strategies with the exception of health risk appraisals. Thus, triangulation of methods with the total model is created to a large extent.

### Pattern Analysis: Levels of Application for Small Firms

Summary Table 3 presents results included in the levels of application analysis for small firms. Results reveal no significant relationships with profit and turnover as outcome variables. Summary Table 4 presents these results with participation rates. The only significant relationship

### Pattern Analysis: Levels of Application for Medium Sized Firms

Results reveal significant relationships for the individual and community levels of application as related to turnover (Summary Table 3). Results also reveal a significant relationship between the individual level of application deviation scores and participation in stress management firms (Summary Table 4).

### Pattern Analysis: Total Model for Large Firms

Results for the unweighted model for large firms show a relationship between total deviation from ideal HPP profile and turnover, as reported in Table 8A, provides support for the hypothesis. It should be noted that the strength of this association is also quite strong (.44). Both the weighted and the unweighted models reveal significant results with participation as the dependent variable (Summary Table 1). Again, sample sizes, however, are becoming decreasingly smaller.

### Pattern Analysis: Intervention Strategy Analysis of Large Firm

Results show a significant relationship between smoking cessation deviation scores and turnover (Summary Table 2). No other significant relationships are reported for profit

and turnover as outcome variables. With participation data, a significant relationship is reported between deviation from ideal health risk appraisal and stress management profiles and participation in these programs.

#### Pattern Analysis: Levels of Application for Large Firms

Results show a significant relationship between organizational deviation scores and turnover (Summary Table 3). It should also be noted that a significant relationship is reported between interpersonal deviation scores and profit, one of the few such significant relationships reported in the entire analysis. In terms of participation, significant results are reported at the interpersonal level of application for health risk appraisal interventions, nutrition and stress interventions, and total participation. Significant relationships are also reported to the organizational level of application for health risk appraisals, nutrition and stress interventions as well as total participation (Summary Table 4).

#### Pattern Analysis: Baseline Chance Model

Results for the baseline chance model intervention strategy analysis show a significant relationship between backcare deviation scores and turnover (Table 9). Results also reveal significant relationships between weight control

deviations and turnover. It should be noted that results show no significant relationships between these intervention strategy deviation scores and participation in the programs; thus, providing some degree of internal validity particularly when one considers that participation rates have shown consistent significant results.

No analysis is included for the levels of application, since as earlier reported, these variables are considered as critical variables.

#### Baseline Chance Model Analysis: Small Firms

Results show a significant relationship between both backcare and weight control deviations and turnover (Summary Table 5). No significant results are reported for participation data, consistent with results reported across all firms.

#### Baseline Chance Model Analysis: Medium and Large Sized Firms

Results show no significant relationships across all medium-sized firms as reported in Summary Table 5. A significant relationship, however, is reported for large firm deviation scores in the backcare program as related to turnover (Summary Table 5).

**Summary**

The chapter discussed data purification and issues of reliability and validity. The methodology employed to test the hypotheses was discussed and the results of each test was presented. The following chapter discusses test results and relates the results to the theoretical literature review in Chapter II. The significance of the research study and its limitations will also be presented, along with directions for future research.

## **CHAPTER V: DISCUSSION AND CONCLUSIONS**

This study empirically examined the performance implications of deviations between an ideal health promotion program profile and those actually in existence at the worksite. The core objective of the study was to determine if deviations from the ideal profile could be traced to certain performance measures; turnover, profitability, and employee participation. In exploring these issues, the study used objective data obtained from the NIH data base. Statistical analysis procedures were employed to test the theoretical linkages. The results obtained provide some support for the hypothesis developed. In this chapter, the results of the hypothesis tests are discussed in detail. The theoretical and practical significance is also presented and related to the theoretical body of knowledge. Based on the findings of this study, contributions and directions for future research are indicated.

### **Theoretical Underpinnings**

The theoretical underpinnings of the study are traced to the Winett, et al. (1989) strategic framework which suggests that multiple intervention strategies administered at multiple levels of application will provide the most

optimum health promotion program profile in terms of health promotion program performance. The health psychology, public health and organizational studies literature all support comprehensive contextual models for understanding both health behaviors and human behaviors in organizations. This study was an attempt to bridge the gap between the organizational literature and the health psychology/public health literatures to expand the domain to which these divergent fields have been applied thus far. Further, no study has heretofore integrated this contextual approach into an exploratory framework that examines health promotion at work. Building on the Winett, et al. (1989) strategic framework, this study tested the hypothesis outlined below.

### **Hypothesis**

Stated in general form:

Those firms that most closely match (fit) the ideal profile of a health promotion program will perform at a higher level than those that do not achieve such a match (fit).

As indicated in Chapter IV, separate analyses were conducted to test the total model pattern deviation and the bivariate fits between intervention strategies and outcome variables (profit, turnover, and participation) and levels



of application and those same outcome variables. A detailed discussion of each of these approaches follows.

#### Pattern Analysis: Total Model

The results of the zero-order correlations relating to the hypothesis provides mixed support. In general terms, these tests provide empirical support for the contention that deviation from an ideal health promotion program profile tends to have certain organizational performance implications. Although no significant statistical relationships are reported for profit and turnover as performance measures, when participation is used as a performance indicator, statistically significant results are found for both the unweighted and weighted models. Here, panel of experts predicted weights would appear to have no impact on performance for the total model (although see analysis for medium-sized firms).

It may be the case, as outlined in Chapter II, that profitability and turnover are more long term expected organizational effectiveness benefits that would accrue to firms establishing health promotion programs at work. Participation is a more direct measure of health promotion program effectiveness and may be an intermediate step or moderator variable for more long-term organizational

performance measures. Therefore, a true test of the hypothesis, using these long-term performance indicators such as profit and turnover would require a longitudinal analysis. Such an analysis could not be accomplished within the context of this cross-sectional study. It should be pointed out, however, that the total model analysis is based on a summation of all intervention strategy analysis. Therefore, the sample size for the total model is less than the sample sizes of each intervention strategy analysis with the exception of nutrition. The Statistical Analysis Package (SAS) drops observations with missing data in any category. This would lead the researcher to conclude that there may have been some statistically significant results for the total model, with respect to turnover, if more firms had been included in the sample size (see intervention strategy analysis).

#### Pattern Analysis: Intervention Strategies

The second approach to testing the profile deviation hypothesis was to examine the bivariate fits between ideal profile intervention strategies and those intervention strategies actually in existence at work. The main logic for conducting such a test was practical utility. Firms may not have the funding or facilities to support a comprehensive health promotion program as recommended by

this study. Thus, with a limited amount of organizational resources, it was of interest to this particular study to determine if there might be an optimal use of these resources. For example, would a fitness program provide more benefits to an organization than would stress management programs should a firm have to choose between the two activities, due to budget constraints.

An analysis of the intervention strategies revealed that there are some statistically significant results amongst the set of bivariate relationships: smoking cessation, fitness, and stress management are reported to be statistically significant with turnover as an outcome variable.

All intervention strategy zero-order correlations are reported to be statistically significant when related to participation in each health promotion intervention strategy with somewhat stronger relationships reported. This would be consistent with the overall model test of the hypothesis providing convergence of results and giving higher power to the test, when participation is used as a performance measure. This is also important considering that the analysis of each intervention strategy simultaneously examines the levels of analyses variables, i.e., the health

risk appraisal (HRA) intervention includes individual, interpersonal, organizational and community level indicators in determining the ideal HRA profile.

In terms of practical utility, it does not appear from these results that choice of one type of intervention over any other strategy would provide greater utilization of a firm's resources. It does suggest, however, that regardless of the intervention or interventions selected, a multi-level application of the intervention is important for program design purposes. Again, a longitudinal analysis could be employed and might uncover more significant differences between these relationships over time.

#### Pattern Analysis: Levels of Application

Results of the zero-order correlations relating to the general hypothesis did not provide empirical support when profitability and turnover were used as performance measures. There was some empirical support provided when participation was added as an outcome variable.

Deviations from an ideal individual level of application profile showed statistically significant results for participation in fitness and nutrition programs which would suggest that firms desiring to increase participation

in these programs would want to provide counseling, information and other self help materials to prospective employees. At the interpersonal level, the nutrition intervention strategy was the only statistically significant relationship reported which suggests that in order to increase participation in nutrition programs, peer and family support are amongst the important factors to consider in health promotion program design. Also, the interpersonal level of application is statistically significant when related to total participation across all programs; probably due to the nutritional analysis results.

At the organizational level of application, statistically significant results are reported in three areas: health risk appraisals, fitness programs and nutrition programs; as well as total participation across all programs. This suggests, from the standpoint of practical utility, that management support, time-off for participation in programs, healthy food choices, organizational incentive programs and policies are all important in providing the infrastructure to encourage participation in most programs.

Finally, at the community level of application, only smoking cessation programs appear to greatly benefit from

community involvement. This might suggest that for employers interested in establishing smoking cessation programs, involvement of local hospitals, and community organizations such as the American Lung Association may increase participation in these programs. These organizations may have more expertise as providers of smoking cessation programs, than would in-house program initiatives.

It should also be noted that participation rates in this sample of firms is below 20% for smoking cessation, fitness, and nutrition programs. Recent research in the field notes a participation rate of 20% to be successful for new organizational program initiatives (Wolfe and Parker, 1994). The greatest mean participation rates were found in HRA and stress management programs, 28% and 17% respectively. For example, with only an average 2% of employees participating in smoking cessation programs, it becomes difficult to conclude that there is or is not a relationship between any particular level of application and participation in health promotion programs. It could be the case that only 2% of the workforce smoke and would thus require this particular intervention; although there is no data to accurately support this inference. Of the 28% participating in health risk appraisal programs, only the

organizational level variables show statistically significant support. Of the 17% participating in stress management programs, there were no statistically significant indicators from the levels of application tests.

Since the intervention strategy analysis reveals statistically significant results for the relationship between stress management deviation scores and participation, one could conclude that for stress management programs, multi-level programs achieve the best results and no one level of application appears to be more important than another.

#### Control for Size

To account for the effects of firm size, separate analyses were conducted for small medium and large firms. A discussion of the results generated from each test of the hypothesis follows.

#### Small Firms

For small firms, there were no significant relationships reported for the total model pattern analysis when profit and turnover are used as performance measures. When participation is included as the performance measure, statistically significant support is found for the form of

the general hypothesis. These findings are consistent with the overall sample of firms. Since small firms represent the greatest number of firms in the sample, 142 out of 278 (almost 50%), one would expect these results to be similar. It should be pointed out that small firms may lack many of the necessary resources for tracking and measuring health promotion activity data; which could account for the vast amounts of missing data across all firms. In terms of the intervention strategy bivariate tests, all intervention strategy results were statistically significant with turnover as an outcome variable.

In the levels of application tests, results were consistent with the total sample when profit and turnover are used as performance measures. With participation added, only the organizational level of application provides statistically significant support for the bivariate test of participation with health risk appraisal activities.

### **Medium-sized Firms**

A statistically significant result is reported for the total weighted model deviation scores and participation in HPPs for this sample of firms. This is the only case where the panel of experts predictions result in differences associated with the weighted model versus the unweighted



model results. Other significant results from the analysis of medium sized firms are revealed in the intervention strategies analyses (participation only) taking into account health risk appraisal and nutrition activities and the levels of application for the fit of individual level of application with participation in stress management programs. Medium size firms account for the greatest number of participants in stress management programs (21%) and the statistically significant result deviation score is quite strong (.40). The threat of job elimination through downsizing, mergers and acquisitions (prevalent in the eighties and all of which tend to increase the amount of job stress) could provide some explanations; although it could not be determined within the context of this study. It cannot, in addition, be determined why the weighted model would offer different performance predictions for medium-sized firms only.

### **Large Firms**

Large firms account for the smallest number of firms in the sample (N=26) so results should be interpreted in light of this account. Statistically significant results are reported at the level of the total unweighted model pattern analysis for turnover. This finding supports the general hypothesis that firms whose HPPs more closely match the

ideal will perform at a higher level than those that do not achieve such a match. This relationship is also quite strong at (.44). Even though the sample size is small, it should also be pointed out that large firms may be more likely to have had programs on-site longer than some of the smaller firms surveyed; which may account for significant relationships being reported with the long-term outcome variables. There was no way to determine from this data base any information on program start-up. When participation is added as an outcome variable, statistically significant results are reported and the relationship for both the unweighted (.60) and the weighted model (.64) is quite strong, accounting for approximately 40% of the variation in total health promotion program participation.

An analysis of the intervention strategies reveals that the smoking cessation intervention strategy provides statistically significant support with turnover as an outcome variable (which could also account for the total model results since this relationship is strong at .52). The sample size here, however, is only 20 firms. No other significant results are reported with profit and turnover. When participation is included as an outcome variable statistically significant support is provided for the health

risk appraisal and stress management intervention strategies.

At the level of application analysis, bivariate fits are statistically significant for the organizational level of application and turnover. This would suggest that large firms pay particular attention to the established infrastructure designed to support their HPPs. When participation is added to the outcome variables interpersonal and organizational indicators statistically support the hypothesis for health risk appraisals, stress management programs, nutrition programs and total participation across all programs accounting for the strongest associations reported in the entire level of application tests.

#### Baseline Chance Model Analyses

An analysis of the baseline chance model deviations reveal quite interesting results. When turnover is used as an outcome variable, some significant results were reported. An examination of this data alone might lead one to conclude that there is no internal validity to the proposed research model, since the backcare and weight control intervention strategies are not included in the proposed ideal HPP profile. However, when participation is included as a

performance measure, no significant results are reported for the baseline intervention strategies. The only significant result reported is between interpersonal deviations and participation in weight control programs. This result does provide some internal validity to the model and provides further support for the form of the general hypothesis.

### Implications of Findings

The results of this study indicate that multiple health promotion strategies administered at multiple levels of application have some direct bearing on health promotion program performance; therefore multi-level approaches need to become a part of any exploratory theory on health promotion at work. Thus far, most of the research in this field has concentrated on individual level factors ignoring the importance of the ecosystem (Winett, et al. 1989). The findings of this study directly challenge this traditional approach that looks at one factor in isolation of other important multi-level, multi-intervention approaches.

It has been eight years since Terborg (1987) outlined the necessity of management researcher involvement in the health promotion arena. This study is an attempt to get involved. It is somewhat surprising that eight years later, only two articles have subsequently appeared in the

management literature (See Wolfe and Ulrich, 1987; Wolfe and Parker, 1994). Some indication is offered that the psychosocial environment is still virtually ignored in this domain of study, in favor of personal responsibility approaches to health promotion. This is an avenue where the organizational studies literature could extend the field of health promotion at work. Other issues of particular interest to organizational researchers include organizational culture, organizational design and job design, areas that are considered to be critical components of work-site health promotion program efforts; however they have been eliminated in health promotion efforts (Wolfe and Parker, 1994).

Theoretical and empirical research continue to stay within the domain of the health literature. Organizational researchers have failed to heed the call, perhaps due to lack of expertise in health promotion itself. However, it is not sufficient to leave the entire body of knowledge to the health promotion, public health and medical communities alone. Since the majority of health promotion programs are administered at the work-site, these researchers need to be joined by the organizational researchers to enhance the field of knowledge and to create information richness. A host of multidisciplinary efforts are necessary to create a

broad base of cumulative knowledge in the field. For example, a health psychologist might be able to provide information on how to enhance the health behavior skill level of program participants, while the management researcher might be able to offer information on how the organizational culture can be changed to support these healthy skills and how to gain top management support. This study has attempted to empirically examine the interrelationships of these variables and to contribute to the cumulative knowledge in the area.

Empirical findings from this study also have practitioner implications. For example, these findings suggest that employer sponsored health promotion programs should become more comprehensive to encourage employee participation. Low participation has been an important concern related to health promotion program effectiveness (Wolfe and Parker, 1994). While low participation rates today can limit beneficial effects for the future, this study shows that participation rates are related to multi-level approaches to work-site interventions. Findings also suggest, that while it may not be necessary for firms to provide all five intervention strategies, it is necessary to encompass the multilevel approach to the intervention strategy or strategies selected.

As stated, individual level approaches still tend to dominate work-site health promotion efforts (Wolfe and Parker, 1994). Such approaches overlook the inherent multi-level nature of ideally designed health promotion programs which have interactive and contextual effects (Best, Brown, Cameron, Smith, and McDonald, 1989). They also tend to focus on individual level responsibility for health which can lead to victim blaming. These approaches are inconsistent with the new wave of proactive company efforts in such areas as social responsibility and Total Quality Management (TQM) which include employee health issues. As organizations continue to embrace these ideas, individual level programs would be expected to be replaced by more comprehensive efforts.

It has also been suggested that organizational efforts in the tracking and measuring of program effectiveness need to be examined. Adequate records have not been kept or the organization may not know what to track and what to measure. This study has confirmed that measurement and tracking data is often missing; however, it presents a novel approach to examining the effectiveness of health promotion programs by utilizing data that can easily be tracked and compiled.

#### **Theoretical and Methodological Contributions of the Study**

The following discussion outlines the theoretical and methodological contributions of this particular research study to the broader literature in both health promotion in particular and organizational studies in general. Both theory and method are considered together because of their inextricable link. This study contributes to the research stream by incorporating the various disciplines of health psychology, public health and organizational studies to examine an important organizational phenomenon, work-site health promotion. This phenomenon has become diffused throughout many organizations. As previously stated, organizational researchers have virtually ignored this arena, leaving it in the domain of the health disciplines. Most of the empirical research has been conducted by health professionals. By pointing out the importance of neglected contributions from the organizational studies literature and how central this research is to the theoretical underpinnings of the model, this study opens up new avenues for organizational research, as well as, interdisciplinary research in the area of work-site health promotion.

In particular to work-site health promotion, cumulative knowledge in the area has been slow to develop (Wolfe and Parker, 1994). The majority of studies conducted thus far have concentrated on single intervention, single level and



single operationalization of performance measures (Braun, Bernacki, and Tsai, 1986). In contrast, this study advances the research stream in work-site health promotion by examining multiple interventions administered at multiple levels of application. It also uses multiple operationalizations of performance measures within the context of a single research study. In terms of the broader knowledge base of organizational and interdisciplinary efforts, there are contributions as well.

Traditional research efforts in the various disciplines examined herein have been mostly dichotomized (Winett, et al. 1989; Pennings, 1992). For example, health psychology and organizational behavior disciplines and resulting research efforts tend to focus on micro-oriented variables. Public health and organizational theory, on the other hand, tend to support research aimed at more macro or environmental level variables. These dichotomies ultimately reinforce theories and resulting methodologies which fail to examine important phenomena in between the polarities. The framework used to develop the model used for this research study was created to bridge the gap between health psychology and public health; and thus, to gain a far richer understanding of human health behaviors (Winett, 1986). Since this particular study is focused on an important

organizational phenomenon, work-site health promotion, it was also its purpose to incorporate various aspects of organizational studies.

By examining an important organizational phenomenon from a multi-level perspective, organizational studies and resulting methodologies are also advanced. Multi-level influences on human behavior in organizations have traditionally been regarded as research "noise", depending on a researcher's orientation and training (Pennings, 1992). In 1992, Pennings presented a challenge for organizational researchers to consider multi-level behavioral influences conjointly; thus, moving the various disciplines beyond their historical myopia. By understanding how behavior and situations at one level can interact with those at another level, the "twilight zone" (the interactive space between various levels) may be better understood. Hopefully, this study has shed some light. Pennings' metaphor of the "Beijing butterfly inducing a distant hurricane" serves to underscore the importance of multi-level approaches, whose byproducts include information richness in the area of organizational behavior and an encouragement of collaborative multidisciplinary studies. This is not only important from a theoretical perspective, but from a methodological one as well.

From the standpoint of method, this study contributes to the research stream by incorporating a pattern deviation multi-level methodology. Multi-level theories may have been slow to develop in part, due to the lack of multi-level methodologies. Method then serves to constrain theory. This study uses a novel approach to a field that lacks in comprehensive multi-level research.

Another important methodological contribution is the use of theoretically generated ideal profiles to examine important organizational variables. Thus far, studies have used empirically generated profiles because of the inherent difficulties in operationalizing theoretically generated ones. Additionally, much of the empirical data collected thus far has been from self-reported participant survey data, thus this study enhances the field by providing an additional means of measurement, in the form of a more objective self-reported secondary data base, that can be easily obtained and compiled.

The data from this study also suggests that there may be differences in health promotion program components and successful programs due to the effects of firm size. Since some of the strongest relationships reported are from the sample of large firms, it would be interesting to conduct

comparative studies on health promotion program effectiveness across firms of different sizes; where the sample sizes are sufficient and consistent for analysis and interpretations. Finally, it appears that since this study took life back in the eighties, that some researchers are looking to expand the domain of the health promotion construct itself as it relates to the organizational level issues in particular. While this will continue to present challenges to researchers in a pursuit to develop a construct valid typology of health promotion, i.e., what is and what is not a health promotion program component, it might also lead to advancements in knowledge from organizational scholars.

In conclusion, since health promotion is a phenomena which gained its popularity in the 1980s, its development and diffusion sequence was still in its infancy when the original NIH data base was established. This study reflects a first effort. More data is now available, the adoption and proliferation of health promotion activities have grown and matured; thus, more studies must be conducted. It could be that health promotion programs have become institutionalized in organizations. In other words, firms adopt programs because it makes good business sense to do so. Its effectiveness may be determined by the extent to

which health promotion program offerings fit with prevailing societal norms rather than bottom line. It would be of research interest to explore early versus late adopters of HHPs to determine the extent to which program effectiveness data is actually reported. It may be that late adopters of HHPs have adopted programs because of the institutionalization of this innovation rather than the expected organizational performance benefits. On the other hand, bottom-line driven firms may not be able to justify continuance of these human resource programs without hard effectiveness data from which to draw upon.

### **Limitations**

With every empirical research study, there are limitations. While the secondary data base used here can be considered more objective than a primary data base of program participant responses, there are still limitations associated with a researcher's choice of secondary data. That is, the NIH data base selected for this study contains vast amounts of missing data of which it was necessary to eliminate the majority of firms from the analysis. This was due to the aggregation of survey responses used to operationalize the indicators created for this study. No follow-up was allowed by the researcher due to restrictions in the use of this data base. Another limitation is that of

small sample sizes, particularly considering that the original data base contained 1378 firms. While it has been determined that this sample is representative of the original data base, sample sizes constrain the use of the magnitude of this data.

The outcome measures were also obtained from self-reported firm responses. There was no information available to the researcher for firm identification purposes such that (i.e., compustat data) could be used to collect performance indicators. It is also the case that profitability and turnover are influenced by more extraneous factors, such as downsizing, which could not be controlled for or determined from the available data.

In addition, the design of this study was cross-sectional in nature and includes 1980's data. Temporal order cannot be determined within the context of this study, which should be examined longitudinally. It is often difficult for researchers to engage in the type of tracking that is necessary for this type of analysis. Further, the data used in this study was largely categorical. This also constrained the use of many parametric statistical procedures. While basic associations have been established,

this study is limited in terms of the causal nature of the relationships explored.

### **Suggestions for Future Research**

Due to the theoretical and methodological contributions of this research study and the limitations outlined above, some directions for future research can now be considered. First, with respect to longitudinal analysis, the NIH has conducted follow-up research with firms through 1992 (Wolfe and Parker, 1994). The 1992 data base could be analyzed and compared with the results of this research study to determine temporal order. It would be of particular interest to assess impacts on profitability and turnover with data that is known to span a decade. It is also necessary to consider the impacts of participation in health promotion programs through the 1980s on performance measures from the 1990s. In other words, it was determined from this study that employee participation is related to multi-level HHP interventions. The data contained herein could be used as an independent variable with profit and turnover from the 1990s as a dependent variable. This would also aid in developing a longitudinal analysis of health promotion program effectiveness. Secondly, it would be important to have the ability to identify standard industry codes for each individual firm. This would allow the researcher to

overcome the limitations inherent with common method variance, by opening up avenues to explore secondary data bases such as Compustat Serve, for organizational performance measures. Thirdly, with respect to turnover and profit as HPP performance measures, some precautions must be observed. As mentioned, these variables are influenced by extraneous factors other than the firm's health promotion program. Thus, it is necessary for researchers to have available other, more direct, measures of HPP effectiveness. These would include factors such as health care costs, health care utilization rates, health behavior data, and involuntary absenteeism due to health related illnesses and disabilities. Because of the National Institute of Health's massive data base, particularly for program components, it would be helpful to have these types of outcome measures also available. It is unlikely that any individual researcher would have the resources necessary to track and create a sample of this magnitude. Health care costs have soared throughout the past decade. Organizations need information about the impacts of HHPs on health care costs/utilization rates to help control costs. Thus, it makes sense not only from a theoretical and methodological standpoint to have available this type of data, but from a practical one as well. This may indeed determine the future survival of health promotion programs at work.



Table 1  
Explanation of Sample Sizes

TOTAL SAMPLE = 1358 Firms  
(Small, Medium & Large Firms)

Intervention Strategy	(Without Participation Data)		(With Participation Data Included)	
	Number of Firms Included	% Total	Number of Firms Included	% Total
Health Risk Appraisals	494	36	233	17
Smoking Cessation Programs	511	38	188	13
Fitness Programs	348	26	155	11
Nutrition Programs	274	20	128	9
Stress Management Programs	433	32	201	15
*Total Model	274	20	**128	9
• SMALL FIRMS (100-259 Employees)				
Health Risk Appraisals	278	20	125	9
Smoking Cessation Programs	268	19	95	7
Fitness Programs	182	13	83	6
Nutrition Programs	142	10	67	5
Stress Management Programs	233	17	102	8
*Total Model	142	10	** 67	5
• MEDIUM-SIZED FIRMS (250-749 Employees)				
Health Risk Appraisals	111	8	59	4
Smoking Cessation Programs	101	7	47	3
Fitness Programs	84	6	38	2
Nutrition Programs	67	4	34	3
Stress Management Programs	102	7	53	4
*Total Model	67	4	** 34	3
• LARGE FIRMS (750 + Employees)				
Health Risk Appraisals	42	3	27	2
Smoking Cessation Programs	39	2	22	2
Fitness Programs	28	2	14	1
Nutrition Programs	26	2	14	1
Stress Management Programs	38	2	23	2
*Total Model	26	2	** 14	1

\*\*Note: Due to missing data and consistency, only those firms with interventions across all categories are included.

\*\*Note: Due to missing data, the SAS program includes only those firms with participation rate data across all firms.

**Table 2**  
**Baseline Chance Interventions**  
**Explanation of Sample Sizes**

<u>Intervention Strategy</u>	<u>Number of Firms with Intervention Strategy</u>	<u>% Total</u>	<u>Number of Firms with Intervention Strategy (with Standardized Participation Scores)</u>	<u>% Total</u>
<b>ALL FIRMS</b>				
Backcare Programs	468	34	194	14
Weight Control Programs	236	17	124	9
<b>Small (100-249 Employees)</b>				
Backcare Programs	264	20	107	8
Weight Control Programs	123	9	61	5
<b>Medium (250-749 Employees)</b>				
Backcare Programs	105	7	48	4
Weight Control Programs	57	4	35	3
<b>Large (750 + Employees)</b>				
Backcare Programs	34	3	22	2
Weight Control Programs	21	2	18	1

**Table 3**  
**Explanation of Ideal Profiles**

Intervention Strategy	Ideal Profile
<u>Health Risk Appraisals</u>	1*
HRA (IND)	7
HRA (INT)	1
HRA (ORG)	16
HRA (COM)	4
TOTHRA	<u>28</u>
<u>Smoking Cessation Programs</u>	1*
SMK (IND)	3
SMK (INT)	3
SMK (ORG)	17
SMK (COM)	4
TOTSMK	<u>27</u>
<u>Fitness Programs</u>	1*
FIT (IND)	2
FIT (INT)	2
FIT (ORG)	16
FIT (COM)	5
TOTFIT	<u>25</u>
<u>Nutrition Programs</u>	1*
NUT (IND)	2
NUT (INT)	2
NUT (ORG)	18
NUT (COM)	4
TOTNUT	<u>26</u>
<u>Stress Management</u>	1*
STR (IND)	2
STR (INT)	2
STR (ORG)	16
STR (COM)	4
TOTSTR	<u>25</u>
TOTAL MODEL	132

\*(Included in total ideal profile count)

Note: IND = individual level of analysis  
 INT = interpersonal level of analysis

ORG = organizational level of analysis  
 COM = community level of analysis

These were developed by the coding system (See Appendix) and indicate the number indicators for each intervention/level of analysis variable to be included in the ideal profile.

**TABLE 3A**  
**EXPLANATION OF IDEAL PROFILES FOR BASELINE CHANCE MODEL**

Intervention Strategy	Ideal Profile
<hr/>	
<u>Backcare Programs</u>	
BCK (IND)	1
BCK (INT)	2
BCK (ORG)	15
BCK (COM)	<u>4</u>
TOTBCK	22
<hr/>	
<u>Weight Control Programs</u>	
WCN (IND)	3
WCN (INT)	2
WCN (ORG)	15
WCN (COM)	<u>4</u>
TOTWCN	24
<hr/>	

Table 4A

Means, standard deviations and zero-order correlations for variables in the total weighted model pattern analysis.

Variable	Zero-Order Correlations				N	M	SD
	1 WTODVPR	2 WTODVTO	3 PROFIT	4 T/O			
WTODVPR	----				274	115.19	2.53
WTODVTO	0.91*	----			274	115.72	2.14
PROFIT	0.10	0.10	----		239	2.85	1.36
TURNOVER	0.05	0.01	0.08	----	201	17.50	21.20

\*p<.0001

Note: WTODVPR = weighted total deviation for profit  
 WTODVTO = weighted total deviation for turnover

Table 4B

Means, standard deviations and zero-order correlations for variables in the total unweighted model pattern analysis.

Variable	Zero-Order Correlations			N	M	SD
	1 TOTDEV	2 PROFIT	3 T/O			
TOTDEV	-----			274	64.38	8.71
PROFIT	0.008	----		239	2.85	1.36
TURNOVER	0.03	0.02	----	201	17.50	21.20

Note: TOTDEV = Total unweighted deviation

Table 4C

Means, standard deviations and zero-order correlations for total unweighted model with participation.

Variable	Zero-Order Correlations				M	SD
	1 TOTDEV	2 PROFIT	3 T/O	4 TOTALP		
TOTDEV	----				60.52	9.62
PROFIT	0.07	----			2.88	1.40
TURNOVER	0.05	0.07	----		15.71	19.82
TOTALP	0.27*	0.18**	0.13***	----	.65	.90

\* p < .005

\*\* p < .01

\*\*\* p < .10

Note: N = 230

TOTDEV = TOTAL DEVIATION

TOTALP = TOTAL PARTICIPATION

Table 4D

Means, standard deviations and zero-order correlations for variables in the total weighted model pattern analysis with participation.

Variable	Zero-Order Correlations						M	SD
	WTODVPR	WTODVTO	WTODVPA	PROFIT	T/O	TOTALP		
WTODVPR	----						115.06	2.75
WTODVTO	.91*	----					115.03	2.47
WTODVPA	.72*	.75*	----				114.96	2.75
PROFIT	.12**	.12**	.12**	----			2.88	1.40
TURNOVER	.03	.02	.05	.07	----		15.71	19.82
TOTALP	-.27***	-.89*	-.80****	.18	.13	----	.65	.90

\* p < .0001

\*\* p < .10

\*\*\* p < .005

\*\*\*\* p < .0005

Note: N = 230

WTODVPR = Weighted total deviation for profit

WTODVTO = Weighted total deviation for turnover

WTODVPA = Weighted total deviation for participation

Table 5A

Means, standard deviations and zero-order correlations for each Intervention Strategy.

Variable	Zero-Order Correlations			N	M	SD
	1 DEV	2 PROFIT	3 T/O			
DEVHRA	----			494	15.59	4.88
PROFIT	-0.01	----		417	2.87	1.40
TURNOVER	0.08* *(p<.10)	0.10*	----	356	14.27	18.10
DEVSMK	----			511	15.15	4.55
PROFIT	-0.02	----		438	2.88	1.39
TURNOVER	0.16* *(p<.01)	0.10** ***(p<.10)	----	360	18.55	21.12
DEVFIT	----			348	12.96	4.28
PROFIT	-0.09*	----		307	2.77	1.42
TURNOVER	0.18** *(p<.10 - in opposite direction of hypothesis) ***(p<.01)	-0.07	----	238	15.45	18.70
DEVNUT	----			274	11.91	4.10
PROFIT	-.10*	----		242	2.93	1.41
TURNOVER	.05 *(p<.10 - in opposite direction of hypothesis)	.006	----	174	14.98	19.26
DEVSTR	----			433	11.55	4.09
PROFIT	-0.03	----		381	2.86	1.40
TURNOVER	0.11* *(p<.05)	0.03	----	305	16.40	20.21

Note: DEVHRA = Health Risk Appraisal  
 DEVSMK = Smoking Cessation  
 DEVFIT = Fitness Deviations  
 DEVNUT = Nutrition Deviations  
 DEVSTR = Stress Management Deviations

Table 5B

Means, standard deviations and zero-order correlations for each Intervention Strategy with participation.

Variable	Zero-Order Correlations				M	M	SD
	1 DEVIATE	2 TOTPART	3 PROFIT	4 T/O			
DEVHRA	----				426	15.06	4.77
TOTPHRA	-0.22*	----			233	.38	.57
PROFIT	-0.01	.16**	----		367	2.89	1.42
TURNOVER	.08	.18***	.11	----	367	14.01	18.00
	*(p<.0005)						
	** (p<.01)						
	*** (p<.10)						
DEVSMK	----				350	13.77	4.57
TOTPSMK	-.22*	----			188	.05	.11
PROFIT	-.04	.16**	----		307	1.87	1.42
TURNOVER	.09	-.0007	.09	----	246	16.02	19.28
	*(p<.001)						
	** (p<.05)						
DEVFIT	----				286	12.24	4.16
TOTPFIT	-0.22*	----			155	.12	.20
PROFIT	-0.07	0.04	----		253	2.82	1.45
TURNOVER	0.15	-.05	-0.05	----	202	14.71	17.82
	*(p<.05)						
DEVNUT	----				230	11.23	3.79
TOTPNUT	-0.20*	----			128	.23	.47
PROFIT	-0.09	0.15**	----		204	2.95	1.44
TURNOVER	0.01	0.04	0.15**	----	9	14.08	17.57
	*(p<.05)						
	** (p<.0001)						
DEVSTR	----				363	10.94	3.91
TOTPSTR	-0.17**	----			201	.17	.36
PROFIT	-0.03	0.28***	----		319	2.85	1.41
TURNOVER	0.10	0.06	0.06	----	264	15.56	19.44
	*(p<.10)						
	** (p<.01)						
	*** (p<.0001)						

Note: DEVHRA = Health Risk Appraisal  
 DEVSMK = Smoking Cessation  
 DEVFIT = Fitness Deviations  
 DEVNUT = Nutrition Deviations  
 DEVSTR = Stress Management Deviations



Table 6A

Means, standard deviations and zero-order correlations for Levels of Application Variables.

Variable	Zero-Order Correlations						M	SD
	DEVIND	DEVINT	DEVORG	DEVCOM	PROFIT	T/O		
DEVIND	1.0						9.61	2.49
DEVINT		1.0					4.19	1.53
DEVORG			1.0				39.86	6.35
DEVCOM				1.0			10.00	2.61
PROFIT	.01	-.02	-.0004	-.02	1.0		2.85	1.36
TURNOVER	.05	.06	-.03	.06	.02	1.0	17.50	21.20

Table 68

Means, standard deviations and zero-order correlations for levels of application including participation.

Variable	Zero-Order Correlations										M	SD
	DEVIND	DEVINT	DEVORG	DEVCOM	TOTPHRA	TOTPSMK	TOTPFIT	TOTPNUT	TOTPSTR	TOTALP		
DEVIND	1.0										8.82	2.43
DEVINT		1.0									4.19	1.53
DEVORG			1.0								39.86	6.35
DEVCOM				1.0							10.00	2.61
TOTPHRA					1.0						.28	.53
TOTPSMK						1.0					.02	.09
TOTPFIT							1.0				.07	.17
TOTPNUT								1.0			.09	.27
TOTPSTR									1.0		.17	.36
TOTALP										1.0	.65	.90

\* p < .05  
 \*\* p < .10  
 \*\*\* p < .01  
 \*\*\*\* p < .0001

Note: N = 122

DEVIND: TOTAL INDIVIDUAL DEVIATIONS  
 DEVINT: TOTAL INTERPERSONAL DEVIATIONS  
 DEVORG: TOTAL ORGANIZATION DEVIATIONS  
 DEVCOM: TOTAL COMMUNITY DEVIATIONS  
 TOTPHRA: TOTAL PARTICIPATION IN HRA PROGRAMS  
 TOTPSMK: TOTAL PARTICIPATION IN SMOKING CESSATION PROGRAMS  
 TOTPFIT: TOTAL PARTICIPATION IN FITNESS PROGRAMS  
 TOTPNUT: TOTAL PARTICIPATION IN NUTRITION PROGRAMS  
 TOTPSTR: TOTAL PARTICIPATION IN STRESS MANAGEMENT PROGRAMS  
 TOTALP: TOTAL PARTICIPATION IN ALL PROGRAMS

Table 7A

Means, standard deviations and zero-order correlations for variables in the total model pattern analysis of small firms.

Variable	Zero-Order Correlations			N	M	SD
	1 TOTDEV	2 PROFIT	3 T/O			
TOTDEV	---			142	64.56	10.05
PROFIT	0.02	---		158	2.91	1.46
TURNOVER	0.03	0.16*	---	129	16.88	20.91
	*	p < .05				

TOTDEV: Total deviation

Table 7B

Means, standard deviations and zero-order correlations for variables in the total weighted model pattern analysis for small firms.

Variable	Zero-Order Correlations				N	M	SD
	1 WTODVPR	2 WTODVTO	3 PROFIT	4 T/O			
WTODVPR	---				142	116.24	2.95
WTODVTO	0.92**	---			142	116.11	2.69
PROFIT	0.09	0.07	---		158	2.91	1.46
TURNOVER	0.08	0.10	0.16*	---	129	16.88	20.91
	*	p < .05					
	**	p < .0001					

WTODVPR: Weighted total deviation for profit  
 WTODVTO: Weighted total deviation for turnover

Table 7C

Means, standard deviations and zero-order correlations for variables in the total model pattern analysis of small firms including participation.

Variable	Zero-Order Correlations				M	SD
	1 TOTDEV	2 TOTALP	3 PROFIT	4 T/O		
TOTDEV	----				119	61.08
TOTALP	-0.26*	----			58	.63
PROFIT	-0.07	0.15	----		102	2.93
TURNOVER	0.04	0.20*	0.16*	----	92	13.71
	* (p < .05)					16.99

TOTDEV: Total deviation  
TOTALP: Total participation

Table 7D

Means, standard deviations and zero-order correlations for variables in the total weighted model pattern analysis of small firms including participation.

Variable	Zero-Order Correlations						M	SD
	WTODVPR	WTODVTO	WTDDVPA	PROFIT	T/O	TOTALP		
WTODVPR	----						119	115.17
WTODVTO	0.92****	----					119	115.12
WTODVPA	0.71****	0.76****	----				119	115.16
PROFIT	-0.04	0.01	0.02	----			102	2.93
TURNOVER	0.03	0.07	-0.04	0.16**	----		92	13.71
TOTALP	-0.38***	-0.44*****	-0.26**	0.15*	0.20**	----	71	.63
	* p < .10							
	** p < .05							
	*** p < .01							
	**** p < .0001							
	***** p < .0005							

WTODVPR: Weighted total deviation for profit  
WTODVTO: Weighted total deviation for turnover  
WTODVPA: Weighted total deviation for participation

Table 7E

Means, standard deviations and zero-order correlations for each Intervention Strategy Analysis of small firms.

Variable	Zero-Order Correlations			N	M	SD
	1 DEVHRA	2 PROFIT	3 T/O			
DEVHRA	---			278	15.52	4.91
PROFIT	-0.06	---		238	2.78	1.43
TURNOVER	0.13* * (p < .05)	0.08	---	201	13.86	17.26
DEVSMK	---			268	14.94	4.62
PROFIT	-0.05	---		229	2.79	1.43
TURNOVER	0.17** * (p < .05) ** (p < .01)	0.16*	---	187	17.83	20.28
DEVFIT	---			182	12.76	4.31
PROFIT	-0.13*	---		159	2.79	1.47
TURNOVER	0.20* * (p < .10) (in opposite direction of proposed hypothesis)	-0.06	---	125	15.40	18.71
DEVNUT	---			142	11.50	4.04
PROFIT	-0.23**	---		124	2.87	1.44
TURNOVER	0.27* * (p < .01) ** (p < .005) (in opposite direction of proposed hypothesis)	-0.06	---	86	13.83	18.36
DEVSTR	---			233	11.38	4.20
PROFIT	-0.03	---		204	2.89	1.43
TURNOVER	0.17* * (p < .05)	0.10	---	164	15.02	17.79
DEVHRA:	HRA deviations					
DEVSMK:	Smoking cessation deviations					
DEVFIT:	Fitness deviations					
DEVNUT:	Nutrition deviations					
DEVSTR:	Stress management deviations					
TOTPSTR:	Total participation in stress management programs					

Table 7F

Means, standard deviations and zero-order correlations for the each Intervention Strategy Analysis of small firms including participation.

Variable	Zero-Order Correlations				N	M	SD
	1 DEVHRA	2 TOTPHRA	3 PROFIT	4 T/O			
DEVHRA	---				241	15.08	4.80
TOTPHRA	-0.13	---			125	.37	.57
PROFIT	-0.04	0.13	---		211	2.81	1.45
TURNOVER	0.13 * (p < .001)	0.31*	0.08	---	180	13.40	17.45
DEVSMK	---				187	13.71	4.64
TOTPSMK	-0.26***	---			95	.05	.10
PROFIT	-0.06	0.20*	---		163	2.82	1.48
TURNOVER	0.16** *** (p < .01)	-0.08 ** (p < .05)	0.15* * (p < .10)	---	130	15.73	19.13
DEVFIT	---				151	12.19	4.23
TOTPFIT	-0.31**	---			83	.13	.21
PROFIT	-0.15***	0.03	---		106	2.82	1.50
TURNOVER	0.18** * (p < .05) ** (p < .05)	-0.07 ** (p < .01) *** (p < .10) (in opposite direction of hypothesis)	-0.05	---	131	14.66	18.71
DEVNUT	---				119	10.95	3.74
TOTPNUT	-0.23*	---			67	.21	.46
PROFIT	-0.25**	0.15	---		103	2.90	1.49
TURNOVER	0.10 * (p < .05)	0.16 ** (p < .005) (in opposite direction of hypothesis)	-0.15	---	74	11.12	11.92
DEVSTR	---				193	10.78	4.04
TOTPSTR	-0.29***	---			102	.16	.29
PROFIT	-0.05	0.21**	---		168	2.86	1.45
TURNOVER	0.16** * (p < .10)	-0.001 ** (p < .05)	0.14* *** (p < .005)	---	140	13.70	16.65
DEVHRA:	HRA deviations						
DEVSMK:	Smoking cessation deviations						
DEVFIT:	Fitness deviations						
DEVNUT:	Nutrition deviations						
DEVSTR:	Stress management deviations						
TOTPSTR:	Total participation in stress management programs						

Table 8A

Means, standard deviations and zero-order correlations for variables in the total model pattern analysis of large firms.

Variable	Zero-Order Correlations			N	M	SD
	1 TOTDEV	2 PROFIT	3 T/O			
TOTDEV	---			26	62.93	12.04
PROFIT	0.25	---		23	2.48	1.06
TURNOVER	0.44*	-0.25	---	16	12.44	12.89

\* p < .10

TOTDEV: Total deviation

Table 8B

Means, standard deviations and zero-order correlations for variables in the total weighted model pattern analysis of large firms.

Variable	Zero-Order Correlations				N	M	SD
	1 TOTDEV	2 TOTALP	3 PROFIT	4 T/O			
TOTDEV	---				22	58.95	8.35
TOTALP	-0.60*	---			17	.58	.92
PROFIT	0.02	0.08	---		20	2.38	1.05
TURNOVER	0.08	-0.24	-0.265	---	13	12.90	13.61

\* p < .005

WTQDVPR: Weighted total deviation for profit  
 WTQDVTO: Weighted total deviation for turnover

Table 9

Means, standard deviations and zero-order correlations for variables included in the baseline chance model Intervention Strategy Analysis.

Variable	Zero-Order Correlations			N	M	SD
	1 DEVBCK	2 PROFIT	3 T/O			
DEVBCK	---			468	11.38	3.41
PROFIT	-0.03	---		391	2.85	1.34
TURNOVER	0.17*	0.06	---	346	17.18	22.06
	* p < .001					
DEVWCN	---			236	11.38	3.41
PROFIT	-0.14*	---		106	2.85	1.34
TURNOVER	0.15*	-0.01	---	79	17.18	22.06
	* p < .05					
DEVBCK =	Backcare deviations					
DEVWCN =	Weight control deviations					



**SUMMARY TABLE 1**  
**TOTAL PROFILE DEVIATION MODEL**

	TOTAL PROFILE DEVIATION MODEL					
	<u>UNWEIGHTED MODEL</u>			<u>WEIGHTED MODEL</u>		
	DV	N	Results	DV	N	Results
All Firms	Profit	239	NS	Profit	239	NS
	Turnover	201	NS	Turnover	201	NS
	Participation	230	Significant (p<.005)	Participation	230	Significant (p<.0005)
Small Firms (100-249 Employees)	Profit	158	NS	Profit	158	NS
	Turnover	129	NS	Turnover	129	NS
	Participation	151	Significant (p<.05)	Participation	151	Significant (p<.05)
Medium-Sized Firms (250-749 Employees)	Profit	74	NS	Profit	74	NS
	Turnover	64	NS	Turnover	64	NS
	Participation	71	NS	Participation	71	Significant (p<.10)
Large Firms (750 + Employees)	Profit	25	NS	Profit	25	NS
	Turnover	18	Significant (p<.10)	Turnover	18	NS
	Participation	22	NS	Participation	22	Significant (p<.005)

SUMMARY TABLE 2  
INTERVENTION STRATEGY DEVIATION MODEL

Sample	IV	DV	Significance	DV	Significance	DV	Significance
All Firms	HRA N=494	Profit 367	NS	Turnover 367	(p<.10)	Participation 233	(p<.0005)
	Smok.Ces. N=511	Profit 307	NS	Turnover 246	(p<.01)	Participation 188	(p<.001)
	Fitness N=348	Profit 253	NS	Turnover 202	(p<.01)	Participation 155	(p<.005)
	Nutrition N=274	Profit 204	NS	Turnover 149	NS	Participation 128	(p<.05)
	Stress Mgmt N=433	Profit 319	NS	Turnover 264	(p<.05)	Participation 201	(p<.01)
Small Firms (100-249 Employees)	HRA N=278	Profit 238	NS	Turnover 201	(p<.05)	Participation 125	NS
	Smok.Ces. N=268	Profit 229	NS	Turnover 187	(p<.01)	Participation 95	(p<.01)
	Fitness N=182	Profit 159	NS	Turnover 125	(p<.10)	Participation 83	(p<.01)
	Nutrition N=142	Profit 124	NS	Turnover 86	(p<.01)	Participation 67	(p<.005)
	Stress Mgmt N=233	Profit 204	NS	Turnover 164	(p<.05)	Participation 102	(p<.005)
Medium-Sized Firms (250- 749 Employees)	HRA N=111	Profit 91	NS	Turnover 80	NS	Participation 59	(p<.05)
	Smok.Ces. N=101	Profit 86	NS	Turnover 69	NS	Participation 47	NS
	Fitness N=84	Profit 72	NS	Turnover 57	NS	Participation 38	NS
	Nutrition N=67	Profit 59	NS	Turnover 45	NS	Participation 34	(p<.10)
	Stress Mgmt N=102	Profit 41	NS	Turnover 77	NS	Participation 53	NS
Large Firms (750 + Employees)	HRA N=42	Profit 34	NS	Turnover 22	NS	Participation 27	(p<.05)
	Smok.Ces. N=39	Profit 33	NS	Turnover 20	(p<.01)	Participation 22	NS
	Fitness N=28	Profit 25	NS	Turnover 17	NS	Participation 14	NS
	Nutrition N=26	Profit 23	NS	Turnover 13	NS	Participation 16	(p<.05)
	Stress Mgmt N=38	Profit 32	NS	Turnover 22	NS	Participation 23	(p<.05)

SUMMARY TABLE 3

LEVELS OF APPLICATION DEVIATION MODEL WITH PROFIT AND TURNOVER AS DEPENDENT VARIABLES

SAMPLE	LEVELS OF APPLICATION DEVIATION MODEL					
	IV	DV	SIGNIFICANCE	DV	SIGNIFICANCE	
All firms N = 239 Profit N = 201 T/O	IND	Profit	NS	Turnover	NS	
	INT	Profit	NS	Turnover	NS	
	ORG	Profit	NS	Turnover	NS	
	COM	Profit	NS	Turnover	NS	
Small Firms (100-249 Employees) N = 123 Profit N = 105 T/O	IND	Profit	NS	Turnover	NS	
	INT	Profit	NS	Turnover	NS	
	ORG	Profit	NS	Turnover	NS	
	COM	Profit	NS	Turnover	NS	
Medium-Sized Firms (250-749 Employees) N = 74 Profit N = 64 T/O	IND	Profit	NS	Turnover	(p<.10)	
	INT	Profit	NS	Turnover	NS	
	ORG	Profit	NS	Turnover	NS	
	COM	Profit	NS	Turnover	(p<.10)	
Large Firms (750 + Employees) N = 26 Profit N = 25 T/O	IND	Profit	NS	Turnover	NS	
	INT	Profit	NS	Turnover	NS	
	ORG	Profit	NS	Turnover	(p<.01)	
	COM	Profit	NS	Turnover	NS	

SUMMARY TABLE 4

LEVELS OF APPLICATION DEVIATION MODEL USING PARTICIPATION AS THE DEPENDENT VARIABLE

SAMPLE	IV	LEVELS OF APPLICATION DEVIATION MODEL											
		DV Significance	DV Significance	DV Significance	DV Significance	DV Significance	DV Significance	DV Significance	DV Significance				
ALL Firms N = 122	IND	PHRA	NS	PSMK	NS	PFIT	(p<.10)	PNUT	(p<.05)	PSTR	NS	PTOT	NS
	INT	PHRA	NS	PSMK	NS	PFIT	NS	PNUT	(p<.05)	PSTR	NS	PTOT	(p<.05)
	ORG	PHRA	(p<.01)	PSMK	NS	PFIT	(p<.01)	PNUT	(p<.10)	PSTR	NS	PTOT	(p<.05)
	COM	PHRA	NS	PSMK	(p<.01)	PFIT	NS	PNUT	NS	PSTR	NS	PTOT	NS
Small Firms (100-249 Employees) N = 58	IND	PHRA	NS	PSMK	NS	PFIT	NS	PNUT	NS	PSTR	NS	PTOT	NS
	INT	PHRA	NS	PSMK	NS	PFIT	NS	PNUT	NS	PSTR	NS	PTOT	NS
	ORG	PHRA	(p<.05)	PSMK	NS	PFIT	NS	PNUT	NS	PSTR	NS	PTOT	NS
	COM	PHRA	NS	PSMK	NS	PFIT	NS	PNUT	NS	PSTR	NS	PTOT	NS
Medium-Sized Firms (250-749 Employees) N = 29	IND	PHRA	NS	PSMK	NS	PFIT	NS	PNUT	NS	PSTR	(p<.05)	PTOT	NS
	INT	PHRA	NS	PSMK	NS	PFIT	NS	PNUT	NS	PSTR	NS	PTOT	NS
	ORG	PHRA	NS	PSMK	NS	PFIT	NS	PNUT	NS	PSTR	NS	PTOT	NS
	COM	PHRA	NS	PSMK	NS	PFIT	NS	PNUT	NS	PSTR	NS	PTOT	NS
Large Firms (750 + Employees) N = 25	IND	PHRA	NS	PSMK	NS	PFIT	NS	PNUT	NS	PSTR	NS	PTOT	NS
	INT	PHRA	(p<.05)	PSMK	NS	PFIT	NS	PNUT	(p<.05)	PSTR	(p<.05)	PTOT	(p<.05)
	ORG	PHRA	(p<.05)	PSMK	NS	PFIT	NS	PNUT	(p<.05)	PSTR	(p<.05)	PTOT	(p<.05)
	COM	PHRA	NS	PSMK	NS	PFIT	NS	PNUT	NS	PSTR	NS	PTOT	NS

Note: IND = Individual  
 INT = Interpersonal  
 ORG = Organizational  
 COM = Community

SUMMARY TABLE 5  
BASELINE CHANGE MODEL

	IV			DV			SIGNIFICANCE			IV			DV			SIGNIFICANCE		
	Backcare Backcare Backcare	Backcare Backcare Backcare	Backcare Backcare Backcare	Profit Turnover Participation	Profit Turnover Participation	Profit Turnover Participation	NS S NS	NS S NS	NS S NS	Weight Control Weight Control Weight Control	Weight Control Weight Control Weight Control	Weight Control Weight Control Weight Control	236 236 124	236 236 124	236 236 124	NS S NS	NS S NS	NS S NS
All Firms																		
Small Firms (100-249 Employees)																		
Medium-Sized Firms (250-749 Employees)																		
Large Firms (750+ Employees)																		

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# **APPENDIX A**

## **CODING SYSTEM FOR NATIONAL SURVEY OF HEALTH PROMOTION ACTIVITIES**

Appendix A

Coding System for National Survey of Health Promotion Activities

<u>Interventions</u>	<u>Indicator</u>	<u>Yes</u>	<u>No</u>	<u>DK</u>	<u>Ideal Type</u>
Health Risk Appraisal	Q1A	1	0	•	1
Smoking Cessation	Q1B	1	0	•	1
Fitness	Q1D	1	0	•	1
Nutrition	Q1F	1	0	•	1
Stress Management	Q1G	1	0	•	1
					<b>5 Total # interventions</b>

Appendix A (cont.)

Intervention: Health Risk Appraisal

Decision Rule #1: All indicators coded equally 1, 0 or .

Levels of Analysis

	Indicator 1 Q2A1	Indicator 2 Q2A2	Indicator 3 Q2A3	Ideal Type	
INDIVIDUAL	<p>Questionnaire Yes <u>1</u> No <u>0</u> DK <u>.</u></p>	<p>Exam Yes <u>1</u> No <u>0</u> DK <u>.</u></p>	<p>Screenings Yes <u>1</u> No <u>0</u> DK <u>.</u></p>	3	
<hr/>					
INTERPERSONAL	<p>Indicator 1 Q4D1 <u>Dependent Eligibility</u> Yes <u>1</u> No <u>0</u> DK <u>.</u></p>	<p>Decision Rule #2: This could easily be an indicator of organizational commitment; however, to avoid double counting, it is coded as indicator of interpersonal level; count across interventions</p>			1
<hr/>					
ORGANIZATIONAL	<p>Indicator 1 Q4A <u>Location of offerings</u> A) <u>On-site</u> B) <u>Primarily on-site</u> C) <u>Equal</u> D) <u>Primarily off-site</u> E) <u>Off-site</u>           <u>0</u></p>	<p>Decision Rule #3: on-site, primarily on-site coded 1 to show strong organization commitment; Equal coded . (to be looked at on individual basis); off-site coded 0</p>	<p>Indicator 2 Q4B <u>Cost</u> A) <u>Company B) Participant</u> C) <u>Shared</u> D) <u>Other</u>           <u>.</u></p>	<p>Decision Rule #4 Company coded 1 to show strong commitment shared coded . (to be looked at on individual basis); participant coded 0</p>	
	<p>Indicator 3 Q4C <u>Time off for participation</u> Yes <u>1</u> No <u>0</u> DK <u>.</u></p>	<p>Indicator 4 Q4D <u>Eligibility</u> A B C D E F G H I J <u>1 1 0 0 0 0 0 0 0 .</u></p>	<p>Decision Rule #5: All employees and full-time coded as 1 to include organizational commitment other responses coded 0; DK coded . for consistency</p>	<p>Indicator 5 Q4K <u>Objectives</u> Yes <u>1</u> No <u>0</u> DK <u>.</u></p>	
	<p>Indicator 6 Q4L <u>MGT Support (CEO)</u> <u>1 2 3 4 5</u> <u>1 1 . 0 0</u></p>	<p>Decision Rule #6 A response of committed or somewhat committed = 1; opposed or somewhat = 0; other = . .</p>	<p>Indicator 7 Q4L <u>MGT Support (Top MGT)</u> <u>1 2 3 4 5</u> <u>1 1 . 0 0</u></p>	<p>Decision Rule #7: Response of 4, 5 considered indicator of organizational commitment = 1; 1 2 3 = 0.</p>	
		<p>Indicator 8 Q4M <u>Budget</u> Yes <u>1</u> No <u>0</u> DK <u>.</u></p>	<p>Indicator 9 Q4Oa <u>Employee Planning</u> <u>1 2 3 4 5</u> <u>0 0 0 1 1</u></p>		



Appendix A (cont.)

<p>Indicator 10 Q4P <u>Promotion/Advertisement</u> Yes <u>0</u> <u>DK</u> <u>0</u> . 1</p>	<p>Indicator 11 Q4Q1 <u>Incentives</u> Yes <u>0</u> <u>DK</u> <u>0</u> . 1</p>	<p>Decision Rule #8 Q4Q2 Considered double counting; thus not included</p>	<p>Indicator 4 Q4Gd <u>Hospitals</u> Yes <u>1</u> <u>DK</u> <u>0</u> .</p>
<p>COMMUNITY Indicator 1 Q4Ga <u>Outside Resources</u> <u>(volunteer agencies)</u> Yes <u>1</u> <u>DK</u> <u>0</u> .</p>	<p>Indicator 2 Q4Gb <u>Public Health</u> <u>Agencies</u> Yes <u>1</u> <u>DK</u> <u>0</u> .</p>	<p>Indicator 3 Q4Gc <u>Consultants</u> Yes <u>1</u> <u>DK</u> <u>0</u> .</p>	<p>Indicator 4 Q4Gd <u>Hospitals</u> Yes <u>1</u> <u>DK</u> <u>0</u> .</p>

Appendix A (Con't)

Intervention: Smoking Cessation

Levels of Analysis

	Indicator 1	Indicator 2	Indicator 3	Indicator 4	Ideal Type
<b>INDIVIDUAL</b>	Indicator 1 Q281 Information Yes <u>No</u> <u>DK</u> 1 0 0	Indicator 2 Q282 Counseling Yes <u>No</u> <u>DK</u> 1 0 0	Indicator 3 Q283 Follow-up Yes <u>No</u> <u>DK</u> 1 0 0	Indicator 4 Q285 Self-help Materials Yes <u>No</u> <u>DK</u> 1 0 0	4
<b>INTERPERSONAL</b>	Indicator 1 Q283 Group Classes Yes <u>No</u> <u>DK</u> 1 0 0	Indicator 2 Q284 Follow-up Yes <u>No</u> <u>DK</u> 1 0 0	Indicator 3 Q401 Dependent Eligibility Yes <u>No</u> <u>DK</u> 1 0 0		3
<b>ORGANIZATIONAL</b>	Indicator 1 Q286 Contests Yes <u>No</u> <u>DK</u> 1 0 0	Indicator 2 Q2871 Policy Yes <u>No</u> <u>DK</u> 1 0 0	Indicator 3 Q48 Cost A) <u>Company B</u> <u>Participant</u> 1 0 0 C) <u>Shared</u> D) <u>Other</u>	Indicator 4 Q48 Cost A) <u>Company B</u> <u>Participant</u> 1 0 0 C) <u>Shared</u> D) <u>Other</u>	13
	Indicator 3 Q4A Location of offerings A) <u>On-site</u> B) <u>Primarily on-site</u> 1 0 0 C) <u>Equal</u> D) <u>Primarily off-site</u> 0 0 0 E) <u>Off-site</u> 0 0 0	Decision Rule #3: on-site, primarily on-site coded 1 to show strong organization commitment; Equal coded • (to be looked at on individual basis); off-site coded 0	Decision Rule #4 Company coded 1 to show strong commitment; shared coded • (to be looked at on individual basis); participant coded 0		
	Indicator 5 Q4C Time off for participation Yes <u>No</u> <u>DK</u> 1 0 0	Indicator 6 Q4D Eligibility A B C D E F G H I J 1 1 0 0 0 0 0 0 0 0	Decision Rule #5: All employees and full- time coded as 1 to include organizational commitment other responses coded 0; DK coded • for consistency	Indicator 7 Q4K Objectives Yes <u>No</u> <u>DK</u> 1 0 0	

Appendix A (con't)

Indicator 8  
 Q4L  
MGT Support (CEO)  
 1 2 3 4 5  
 1 1 0 0

Decision Rule #6  
 A response of committed  
 or somewhat committed  
 = 1; opposed or some-  
 what = 0; other = .

Indicator 9  
 Q4L  
MGT Support  
 (Top MGT)  
 1 2 3 4 5  
 1 1 0 0

Indicator 10  
 Q4M  
Budget  
 Yes No DK  
 1 0 0

Indicator 11  
 Q40a  
Employee  
Planning  
 1 2 3 4 5  
 0 0 0 1 1

Decision Rule #7:  
 Response of 4,  
 5 considered  
 Indicator of  
 organizational  
 commitment = 1;  
 1 2 3 = 0.

Indicator 12  
 Q4P  
Promotion/Advertisement  
 Yes No DK  
 1 0 0

Indicator 13  
 Q4Q1  
Incentives  
 Yes No DK  
 1 0 0

Decision Rule #8  
 Q4Q2  
 Considered double  
 counting; thus not  
 included

---

COMMUNITY 5

Indicator 1  
 Q2B72C  
Regulation  
 Yes No  
 1 0

Indicator 2  
 Q4Ga  
Outside Resources  
 (volunteer agencies)  
 Yes No DK  
 1 0 0

Indicator 3  
 Q4Gb  
Public Health  
Agencies  
 Yes No DK  
 1 0 0

Indicator 4  
 Q4Gc  
Consultants  
 Yes No DK  
 1 0 0

Indicator 5  
 Q4Gd  
Hospitals  
 Yes No DK  
 1 0 0

Appendix A (cont.)

Intervention: Fitness

Levels of Analysis

INDIVIDUAL Indicator 2 2

Indicator 1  
Q2D1  
Information  
Yes No DK  
1 0 0

Indicator 2  
Q2D2  
Counseling  
Yes No DK  
1 0 0

INTERPERSONAL Indicator 2 2

Indicator 1  
Q2D3  
Group Classes  
Yes No DK  
1 0 0

Indicator 2  
Q4D1  
Dependents Eligible  
Yes No DK  
1 0 0

ORGANIZATIONAL Indicator 1 12

Indicator 1  
Q2D4  
Facilities  
Yes No DK  
1 0 0

Decision Rule #9  
Do not count sub-parts  
to this question - it  
leads to double counting.

Indicator 2  
Q4A  
Location of offerings  
A) On-site B) Primarily on-site  
1 1  
C) Equal D) Primarily off-site  
0 0  
E) Off-site  
0

Indicator 3  
Q4B  
Cost  
A) Company B) Participant  
1 0  
C) Shared D) Other  
0 0

Indicator 4  
Q4K  
Objectives  
Yes No DK  
1 0 0

Indicator 4  
Q4C  
Time off for participation  
Yes No DK  
1 0 0

Indicator 5  
Q4D  
Eligibility  
A B C D E F G H I J  
1 1 0 0 0 0 0 0 0 0

Indicator 6  
Q4K  
Objectives  
Yes No DK  
1 0 0

Indicator 7  
Q4L  
MGT Support (CEO)  
1 2 3 4 5  
1 1 0 0 0

Indicator 8  
Q4L  
MGT Support (Top MGT)  
1 2 3 4 5  
1 1 0 0 0

Indicator 9  
Q4M  
Budget  
Yes No DK  
1 0 0

Indicator 10  
Q40a  
Employee Planning  
1 2 3 4 5  
0 0 0 1 1

Decision Rule #5:  
All employees and full-time  
coded as 1 to include  
organizational commitment  
other responses coded 0;  
DK coded for consistency

Decision Rule #6  
A response of committed  
or somewhat committed  
= 1; opposed or somewhat  
= 0; other = .

Decision Rule #7:  
Response of 4,  
5 considered  
indicator of  
organizational  
commitment = 1;  
1 2 3 = 0.

Appendix A (con't)

Indicator 11  
 q4p  
Promotion/Advertisement  
 Yes 1 No 0 DK 0

Indicator 12  
 q4q1  
Incentives  
 Yes 1 No 0 DK 0

Decision Rule #8  
 q4q2  
 Considered double  
 counting; thus not  
 included

COMMUNITY

Indicator 1  
 q2D6  
Mbrshp Subsidy  
 Yes 1 No 0 DK 0

Indicator 2  
 q4Ga  
Outside Resources  
(volunteer agencies)  
 Yes 1 No 0 DK 0

Indicator 3  
 q4Gb  
Public Health  
Agencies  
 Yes 1 No 0 DK 0

Indicator 4  
 q4Gc  
Consultants  
 Yes 1 No 0 DK 0

Indicator 5  
 q4Gd  
Hospitals  
 Yes 1 No 0 DK 0

5

Appendix A (cont.)

Intervention: Nutrition

Levels of Analysis

INDIVIDUAL      Indicator 1      Indicator 2  
                   q2F1      q2F2  
 Information      Counseling  
 Yes No DK      Yes No DK  
 1      0      1  
                   0      0

INTERPERSONAL      Indicator 1      Indicator 2  
                           q2F3      q4D1  
 Group Classes      Dependent Eligibility  
 Yes No DK      Yes No DK  
 1      0      1  
                   0      0

ORGANIZATIONAL      Indicator 1      Indicator 2      Indicator 3  
                           q2F4(a)      q2F4(b)      q2F5  
 Healthy Food Choices      Vending      Special Events  
 Cafeteria      Yes No DK      Yes No DK  
 1      0      1  
                   0      0  
                   1      0

Indicator 4      Indicator 5      Decision Rule #4  
 q4A      on-site, primarily on-site      Company coded 1  
 Location of offerings      coded 1 to show strong      to show strong  
 A) On-site B) Primarily on-site      organization commitment;      commitment; shared  
 1      Equal coded . (to be looked      coded . (to be looked  
 C) Equal D) Primarily off-site      at on individual basis);      at on individual basis);  
 0      off-site coded 0      participant coded 0  
 E) Off-site      0

Indicator 6      Indicator 7      Indicator 8  
 q4C      q4D      q4K  
 Time off for participation      Eligibility      Objectives  
 Yes No DK      A B C D E F G H I J      Yes No DK  
 1      1 1 0 0 0 0 0 0 0 0      1

Appendix A (cont)

<p>Indicator 9 Q4L MGT Support (CEO) 1 2 3 4 5 1 1 0 0 0</p>	<p>Decision Rule #6 A response of committed or somewhat committed = 1; opposed or somewhat = 0; other = .</p>	<p>Indicator 10 Q4L MGT Support (Top MGT) 1 2 3 4 5 1 1 0 0 0</p>	<p>Indicator 11 Q4M Budget Yes No DK 1 0 0</p>	<p>Indicator 12 Q40a Employee Planning 1 2 3 4 5 0 0 0 1 1</p>	<p>Decision Rule #7: Response of 4, 5 considered indicator of organizational commitment = 1; 1 2 3 = 0.</p>
<p>Indicator 13 Q4P Promotion/Advertisement Yes No DK 1 0 0</p>	<p>Indicator 14 Q4Q1 Incentives Yes No DK 1 0 0</p>	<p>Decision Rule #8 Q4Q2 Considered double counting; thus not included</p>	<p>Indicator 3 Q4Gc Consultants Yes No DK 1 0 0</p>	<p>Indicator 4 Q4Gd Hospitals Yes No DK 1 0 0</p>	<p>4</p>
<p>COMMUNITY Indicator 1 Q4Ga Outside Resources (volunteer agencies) Yes No DK 1 0 0</p>	<p>Indicator 2 Q4Gb Public Health Agencies Yes No DK 1 0 0</p>	<p>Indicator 3 Q4Gc Consultants Yes No DK 1 0 0</p>	<p>Indicator 4 Q4Gd Hospitals Yes No DK 1 0 0</p>	<p>Indicator 4 Q4Gd Hospitals Yes No DK 1 0 0</p>	<p>4</p>

Appendix A (cont.)

Intervention: Stress Management

Levels of Analysis

INDIVIDUAL

Indicator 1 q2G1 <u>Information</u> Yes No DK 1 0 .	Indicator 2 q2G2 <u>Counseling</u> Yes No DK 1 0 .	Indicator 3 q2G4 <u>Follow-up</u> Yes No DK 1 0 .
Indicator 4 q2G7 1) <u>Focus (Techniques)</u> Yes No DK 1 0 .	Indicator 5 q2G7 2) <u>Focus (Environment)</u> Yes No DK 1 0 .	Ideal Type 5

INTERPERSONAL

Indicator 1 q2G3 <u>Group Classes</u> Yes No DK 1 0 .	Indicator 2 q4D1 <u>Dependent Eligibility</u> Yes No DK 1 0 .	2
---	---	---

ORGANIZATIONAL

Indicator 1 q2G5 <u>Events</u> Yes No DK 1 0 .	Indicator 2 q2G7 3 <u>Focus (Environment)</u> Yes No DK 1 0 .	13
--	---	----

Indicator 3  
 q4A  
Location of offerings  
 1) On-site B) Primarily on-site  
 C) Equal D) Primarily off-site  
 E) Off-site  
 0

Decision Rule #3:  
 on-site, primarily on-site  
 coded 1 to show strong  
 organization commitment;  
 Equal coded . (to be looked  
 at on individual basis);  
 off-site coded 0

Indicator 4  
 q4B  
Cost  
 A) Company B) Participant  
 C) Shared D) Other  
 1 0 .

Decision Rule #4  
 Company coded 1  
 to show strong  
 commitment; shared  
 coded . (to be looked  
 at on individual basis);  
 participant coded 0

Indicator 5  
 q4C  
Time off for participation  
 Yes No DK  
 1 0 .

Decision Rule #5:  
 All employees and full-  
 time coded as 1 to include  
 organizational commitment  
 other responses coded 0;  
 DK coded . for consistency

Indicator 6  
 q4D  
Eligibility  
 A B C D E F G H I J  
 1 1 0 0 0 0 0 0 .

Indicator 7  
 q4K  
Objectives  
 Yes No DK  
 1 0 .



Appendix A (cont.)

Indicator 8  
 Q4L  
 MGT Support (CED)  
 1 2 3 4 5  
 1 1 0 0 0

Decision Rule #6  
 A response of committed  
 or somewhat committed  
 = 1; opposed or some-  
 what = 0; other = ..

Indicator 9  
 Q4L  
 MGT Support  
 (Top MGT)  
 1 2 3 4 5  
 1 1 0 0 0

Indicator 10  
 Q4M  
 Budget  
 Yes No DK  
 1 0 0

Indicator 11  
 Q40a  
 Employee  
 Planning  
 1 2 3 4 5  
 0 0 0 1 1

Decision Rule #7:  
 Response of 4,  
 5 considered  
 indicator of  
 organizational  
 commitment = 1;  
 1 2 3 = 0.

Indicator 12  
 Q4P  
 Promotion/Advertisement  
 Yes No DK  
 1 0 0

Indicator 13  
 Q4Q1  
 Incentives  
 Yes No DK  
 1 0 0

Decision Rule #8  
 Q4Q2  
 Considered double  
 counting; thus not  
 included

COMMUNITY

Indicator 1  
 Q4Ga  
 Outside Resources  
 (volunteer agencies)  
 Yes No DK  
 1 0 0

Indicator 2  
 Q4Gb  
 Public Health  
 Agencies  
 Yes No DK  
 1 0 0

Indicator 3  
 Q4Gc  
 Consultants  
 Yes No DK  
 1 0 0

Indicator 4  
 Q4Gd  
 Hospitals  
 Yes No DK  
 1 0 0

4

## **APPENDIX B**

# **PANEL OF EXPERTS SURVEY ON WORKSITE HEALTH PROMOTION PROGRAM EFFECTIVENESS**

RECEIVED

SEP 13 1993

MEDICAL

THE UNIVERSITY OF NORTH CAROLINA AT GREENSBORO

Joseph M. Bryan School of Business and Economics

Department of Management and Marketing
366 Bryan Building, UNCG
Greensboro, NC 27412-5001
(919) 334-5691

September 10, 1993

UNCG CELEBRATE OUR CENTURY 1891-1991

Ms. Sharon Muckenfuss
Medical Manager
Gilbarco, Inc.
P. O. Box 22087
Greensboro, NC 27420

RE: Panel of Experts on Work-Site Health Promotion Program Effectiveness

Dear Ms. Muckenfuss:

I am a doctoral candidate at Virginia Tech and an instructor at UNC-Greensboro. My dissertation proposal involves the study of work-site health promotion program (HPP) effectiveness. I am assembling a panel of experts in the area of health promotion to answer the questions below.

You are asked to weight the following health promotion activities in terms of their importance to profitability, employee turnover and employee participation in the program. Please indicate your answers in terms of percentages.

Table with 5 rows and 3 columns: Activity, Profitability, Turnover, Participation. Handwritten percentages are provided for each cell.

Responses will be used to develop a weighting scale to examine the effectiveness of particular HPP activities on these organizational performance variables. If you wish to be notified of the results of this survey, please check the box below. Should you have questions, please call 621-8908 (h) or 334-5691 (w).

Thank you for your time and interest in health promotion. Please return your responses to me in the self-addressed envelope provided.

Sincerely,

Handwritten signature: Kathy D. Summers

Kathy D. Summers

Response notification box: [ ]

Joseph M. Bryan School of Business and Economics

Department of Management and Marketing  
366 Bryan Building, UNCG  
Greensboro, NC 27412-5001  
(919) 334-5691

THE  
UNIVERSITY  
OF  
NORTH  
CAROLINA  
AT  
GREENSBORO

September 10, 1993

UNCG  
CELEBRATE OUR CENTURY  
1891 • 1991

Ms. Barbara Pender  
Wellness Program Director  
Wrangler Company  
P. O. Box 21498  
Greensboro, NC 27420

RE: Panel of Experts on Work-Site Health Promotion Program Effectiveness

Dear Ms. Pender:

I am a doctoral candidate at Virginia Tech and an instructor at UNC-Greensboro. My dissertation proposal involves the study of work-site health promotion program (HPP) effectiveness. I am assembling a panel of experts in the area of health promotion to answer the questions below.

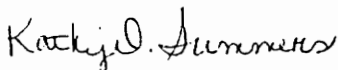
You are asked to weight the following health promotion activities in terms of their importance to profitability, employee turnover and employee participation in the program. Please indicate your answers in terms of percentages.

	<u>Profitability</u>	<u>Turnover</u>	<u>Participation</u>
1) Health Risk Appraisals	_____	_____	10%
2) Fitness Programs	_____	_____	11%
3) Nutrition Programs	_____	_____	12%
4) Stress Management Programs	_____	_____	4%
5) Smoking Cessation Programs	_____	_____	3%
	100%	100%	100%

Responses will be used to develop a weighting scale to examine the effectiveness of particular HPP activities on these organizational performance variables. If you wish to be notified of the results of this survey, please check the box below. Should you have questions, please call 621-8908 (h) or 334-5691 (w).

Thank you for your time and interest in health promotion. Please return your responses to me in the self-addressed envelope provided.

Sincerely,



Kathy D. Summers

Joseph M. Bryan School of Business and Economics

Department of Management and Marketing  
366 Bryan Building, UNCG  
Greensboro, NC 27412-5001  
(919) 334-5691

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September 10, 1993

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Ms. Kathleen McCann  
Director of Education  
Wesley Long Hospital  
501 N. Elam Avenue  
Greensboro, NC 27402

RE: Panel of Experts on Work-Site Health Promotion Program Effectiveness

Dear Ms. McCann:

I am a doctoral candidate at Virginia Tech and an instructor at UNC-Greensboro. My dissertation proposal involves the study of work-site health promotion program (HPP) effectiveness. I am assembling a panel of experts in the area of health promotion to answer the questions below.

You are asked to weight the following health promotion activities in terms of their importance to profitability, employee turnover and employee participation in the program. Please indicate your answers in terms of percentages.

	<u>Profitability</u>	<u>Turnover</u>	<u>Participation</u>
1) Health Risk Appraisals	<u>10</u>	<u>10</u>	<u>40%</u>
2) Fitness Programs	<u>10</u>	<u>30</u>	<u>10</u>
3) Nutrition Programs	<u>15</u>	<u>10</u>	<u>30</u>
4) Stress Management Programs	<u>15</u>	<u>30</u>	<u>15</u>
5) Smoking Cessation Programs	<u>50</u>	<u>30</u>	<u>5</u>
	100%	100%	100%

Responses will be used to develop a weighting scale to examine the effectiveness of particular HPP activities on these organizational performance variables. If you wish to be notified of the results of this survey, please check the box below. Should you have questions, please call 621-8908 (h) or 334-5691 (w).

Thank you for your time and interest in health promotion. Please return your responses to me in the self-addressed envelope provided.

Sincerely,

Kathy D. Summers

Joseph M. Bryan School of Business and Economics

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366 Bryan Building, UNCG  
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(919) 334-5691

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September 10, 1993

Ms. Karen Hills  
Director  
Wellness Council of the Piedmont  
1200 N. Elm Street  
Greensboro, NC 27401-1020

RE: Panel of Experts on Work-Site Health Promotion Program Effectiveness

Dear Ms. Hills:

I am a doctoral candidate at Virginia Tech and an instructor at UNC-Greensboro. My dissertation proposal involves the study of work-site health promotion program (HPP) effectiveness. I am assembling a panel of experts in the area of health promotion to answer the questions below.

You are asked to weight the following health promotion activities in terms of their importance to profitability, employee turnover and employee participation in the program. Please indicate your answers in terms of percentages.

		WTOTD.V.P.R	WTOTD.V.T.O	WTOTD.V.P.A
		Profitability	Turnover	Participation
1) Health Risk Appraisals = #R(147) 13	(40)	10.133	(25) 10.081	(165) 30.413
2) Fitness Programs	(40)	10.133	(80) 30.258	(50) 20.140
3) Nutrition Programs	(40)	10.133	(72) 20.167	(20) 20.205
4) Stress Management Programs	(50)	10.108	(75) 20.241	(45) 20.160
5) Smoking Cessation Programs	(130)	60.433	(50) 20.258	(35) 10.052
		100%	100%	100%

Responses will be used to develop a weighting scale to examine the effectiveness of particular HPP activities on these organizational performance variables. If you wish to be notified of the results of this survey, please check the box below. Should you have questions, please call 621-8908 (h) or 334-5691 (w).

Thank you for your time and interest in health promotion. Please return your responses to me in the self-addressed envelope provided.

Sincerely,

*Kathy D. Summers*

Kathy D. Summers

**APPENDIX C**

**COVER PAGE OF NATIONAL INSTITUTE OF HEALTH  
SURVEY INSTRUMENT**

Received 4 | 15 | 85

PVP

Department of Health & Human Services

A NATIONAL SURVEY OF WORKSITE HEALTH PROMOTION ACTIVITIES

Survey Instrument

The survey instrument is outlined in a flow chart on the next page. Three different types of worksites will be identified during the first nine screening questions:

- 1) Worksites with no health promotion activities
- 2) Worksites with few health promotion activities (information programs and/or policies only)
- 3) Worksites with health promotion activities

The first group will be asked a series of questions about their worksite which will enable us to compare those worksites with activities to those without them. The second group will be asked questions about the types of activities that they have in the specific areas in which they identified that they had some activities. After specifying information/policy types of activities, they will also answer the questions about worksite characteristics. The third group (with health promotion activities) will be asked to respond to many questions about the types of activities currently at their worksite as well as specific questions about these activities (e.g., frequency, participation, location, etc.). We hope to complete at least 600 long interviews of worksites with health promotion activities.

The survey instrument will be programmed on a CATI (computer-assisted telephone interview) system. Therefore, the survey instrument that follows represents the specifications for the CATI program. Skip patterns will automatically occur, with options modified based on earlier answers where appropriate.

All instructions which will not be read by the interviewers are placed in *italics*. Open-ended questions which will not be coded by the interviewer at the time the answer is given are indicated by a line for recording the answer. Open-ended questions which will be coded while the answer is given are indicated by a checklist in *italics* which follows the question. Open-ended questions are used in two types of cases: 1) many different response categories would have to be read and it would take too much time, and 2) when reading response categories would strongly influence the answers obtained.



**APPENDIX D**

**RELIABILITY RATING FOR CODING SYSTEM  
FROM APPENDIX A**

A) <u>Health Risk Appraisals</u>		Ind	Int	Org	Com
1. <u>Q2A1</u>	Is a health risk questionnaire available to employees at your worksite?	✓			
2. <u>Q2A2</u>	Are periodic health exams/physicals offered to any employees at your worksite?	✓			
3. <u>Q2A3A</u>	Are periodic blood pressure screenings,	✓			
<u>Q2A3F</u>	tests of physical fitness,	✓			
<u>Q2A3G</u>	cancer screenings,	✓			
<u>Q2A3HA</u>	cholesterol screenings,	✓			
<u>Q2A3HB</u>	blood sugar screenings offered?	✓			
B) <u>Smoking Cessation</u>		Ind	Int	Org	Com
1. <u>Q2B1</u>	Has your worksite offered information to inform employees about harmful effects of smoking?	✓			
2. <u>Q2B2</u>	Has individual counseling been offered to help employees stop smoking?	✓			
3. <u>Q2B5</u>	Have self-help materials been made available to help smokers stop smoking?	✓			
4. <u>Q2B4</u>	Does your worksite offer a follow-up program to provide assistance/support to participants?	✓			
5. <u>Q2B3</u>	Have group classes been offered in which a trained leader meets with a group of employees to help them stop smoking?	✓			
6. <u>Q2B6</u>	Have special events such as stop smoking contests or participation in a smoke-out been offered?		✓		
7. <u>Q2B7</u>	Does your worksite have a formal policy restricting smoking?			✓	
C) <u>Fitness</u>		Ind	Int	Org	Com
1. <u>Q2D1</u>	Does your worksite offer information about exercise and physical fitness to increase awareness and knowledge?	✓			
2. <u>Q2D2</u>	Does your worksite offer individual counseling to help employees implement/design an exercise program?	✓			
3. <u>Q2D3</u>	Does your worksite offer group classes or workshops such as walking clubs, aerobics classes or other organized group programs to improve physical fitness?		✓		
4. <u>Q2D4</u>	Does your worksite have exercise facilities such as a gym or equipment that can be checked out?	✓			
5. <u>Q2D5</u>	Does your worksite offer subsidized membership to an exercise facility or club?	✓			

D) <u>Nutrition</u>		Ind	Int	Org	Com
1. <u>Q2F1</u>	Does your worksite offer information about healthy food choices?	✓			
2. <u>Q2F2</u>	Does your worksite offer individual counseling to help individuals improve nutrition habits?	✓			
3. <u>Q2F3</u>	Does your worksite offer group classes to improve nutrition habits?		✓		
4. <u>Q2F4A</u>	Does your worksite offer healthy choices in cafeteria			✓	
<u>Q2F4B</u>	vending areas?			✓	
5. <u>Q2F5</u>	Does your worksite offer special events or innovations to promote healthy nutrition?		✓		

E) <u>Stress Management</u>		Ind	Int	Org	Com
1. <u>Q2G1</u>	Does your worksite offer information about sources of stress and how to manage stress?	✓			
2. <u>Q2G2</u>	Does your worksite offer individual counseling to help individuals learn to manage stress?	✓			
3. <u>Q2G3</u>	Does your worksite offer group classes or workshops to help individuals learn how to manage stress?		✓		
4. <u>Q2G4</u>	Is there a follow-up program for these activities after participants have completed these programs?			✓	
5. <u>Q2G5</u>	Does your worksite offer special events or innovations to promote stress management?		✓		
6. <u>Q2G7C</u>	Does your worksite attempt to change the organization so that employees will experience less stress?			✓	
7. <u>Q2G6</u>	Does your worksite offer special rooms where employees can relax?			✓	