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EXAMINING THE EFFECTS OF INCENTIVE-BASED HEALTH BENEFITS: A CLOSER LOOK AT THE EFFECTS OF PERCEIVED CONTROL AND FAIRNESS ON EMPLOYEE BEHAVIORS AND PERCEPTIONS

by

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ABSTRACT

EXAMINING THE EFFECTS OF INCENTIVE-BASED HEALTH BENEFITS: A CLOSER LOOK AT THE EFFECTS OF PERCEIVED CONTROL AND FAIRNESS ON EMPLOYEE BEHAVIORS AND PERCEPTIONS

By

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A new type of program is on the rise in organizations to compensate for the escalating costs of health insurance offered to employees as alternative compensation. In these programs, employees are differentially charged for health insurance based on their health level as determined by the organization. Reactions to these programs vary widely among employees, regardless of their individual outcomes, and may be explained by examining employee perceptions of fairness. Giving employees control over their own outcomes, as is done in these programs, may increase perceptions of fairness and lessen the adverse effects of negative outcomes explaining some perceptual and behavioral variations. Ideally, increased perceptions of fairness would be accompanied by increased commitment to the program (Korsgaard, Schweiger, & Sapienza, 1995). This study investigates the effects of outcome control as it relates to health on perceptions of fairness by proposing a model that suggests that perceptions of outcome control and fairness dually influence employees' commitment to improving their health, which would

subsequently lead to an increase in health-related behaviors. The data required to test the proposed model were collected in two Midwest hospitals, one employing the incentive-based health benefits program (N= 243) and the other taking a more traditional benefits approach (N= 273). Overall the model was supported. Specific findings and implications of this research are discussed.

To my parents, Terry and Paula Wasson.

They have been a source of strength and love throughout my entire life.

They believed in me when I didn't and pushed me where I didn't think I could go.

I will be eternally grateful for all that they have given me.

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INTRODUCTION

For decades organizations have offered medical benefits to employees as a form of alternative compensation. Recently, however, medical insurance has become increasingly expensive for everyone, including organizations. In fact, in 1987 United States organizations spent approximately $95 billion in health care costs, about two to five thousand dollars per employee (Colosi, 1988) and that amount is rising rapidly every year due to the increasing costs of health care. Organizations are bearing the brunt of these costs, as health insurance has become an accepted and expected form of compensation for employment. Due to the rising costs of health care and the expectation that employers will provide health care insurance to all employees, organizations have attempted to hold down these escalating costs through a variety of means.

The first solution generally utilized to control the cost of health care is to require employees to pay more for their own health care. In some cases organizations have decreased the coverage employees receive, restricted the amount employers will pay for certain procedures, or instituted co-pay programs where employees share in the costs of health care. All these methods cut the costs of health care to the organization, but they do so by turning the costs either in dollars or in increased health risk over to the employees.

The second solution to aid organizations that are dealing with health care costs is to attempt to control the behaviors of employees so that the health care they receive is less costly. There are two specific methods that have been implemented to control employee health-related behaviors. The first is to restrict what health care employees may seek by requiring that they get approval from the insurance provider before any health care is sought or obtained. The second method to control the behaviors of

employees has been to require they be a part of an HMO. HMOs require that employees receive health care from a specific set of physicians who are employed by the insurance provider and who actively strive to keep health care costs at a minimum.

A third solution to reduce the rising costs of health care is becoming more popular. A few organizations have tried to reduce costs by attempting to raise overall employee health. This alternative operates on the notion that healthy employees use less health services, therefore cost the organization less. Organizations are realizing what health professionals and researchers have long known, that to save money and increase health, the single most important health factor is prevention and that most behavioral or psychological determinants of health are modifiable (Baum, Krantz, & Gatchel, 1997). For instance, the most important modifiable health risk to Americans is cigarette smoking which is linked to over 350,000 deaths a year from heart disease, cancers, and lung disease (Matarazzo, 1988). In addition, the single leading cause of death in the United States has been cardiovascular disease for the past decade (Higgins & Luepker, 1998: NHLBI, 1994). Research suggests that the emergence of cardiovascular disease in people is greatly determined by lifestyle, specifically, poor diet, lack of exercise, and smoking (Krantz, Grunberg, & Baum, 1985). Finally, obesity is also linked to a variety of life threatening illnesses such as hypertension, diabetes, and cancer (Sjostrom, 1993; Stunkard & Wadden, 1993). While each of these important health issues have both genetic and environmental factors, researchers support the notion that the effects of a genetic predisposition can be mitigated to some degree by the performance of healthy behaviors (Brownwell & Wadden, 1992).

Hoping to improve employee overall health, some organizations encourage employees to lead healthier lifestyles by creating Employee Assistance Programs (EAP) which provide employees with counseling and health services or in-house gyms for employees to use free of charge and health programs such as smoking cessation and weight loss for all employees to voluntarily attend (Weiss, Fielding, & Baum, 1991). In addition, a few organizations provide healthy individuals with monetary incentives and disincentives to the unhealthy by requiring them to contribute more than their healthy counterparts to the cost of their health insurance. These programs were created to cut health care costs immediately and encourage a healthier work force for the long term. This approach combines principles from the previous solutions to reduce the costs of health care immediately by requiring the most costly, unhealthy, employees to pay more for their health care while also providing a long term reduction in health care costs by increasing overall employee health. One of these incentive-based programs will be investigated in this study.

This system of differentially providing incentives to employees based on their health to reduce costs and increase employee health presents a novel situation to researchers. The new system operates on the same premise that automobile insurance policies have used from the start, that of making the most dangerous, costly persons covered pay more for their insurance. However, applying the auto insurance analogy to health insurance differs in one fundamental way. Drivers with records of frequent reckless driving are, for the most part, responsible for their behaviors. On the other hand, an individual with high blood pressure has a higher risk of developing cardiovascular disease (Somes, Harshfield, Alpert, et al., 1995), but it is less clear that the "fault" for the

hypertension lies as completely with his or her behavior. In the hypertension example, blame is not as clearly discernible because controversy still surrounds the degree to which an individual can control his or her blood pressure (Smith, Turner, Ford, et al., 1987). For instance, a child of one parent with high blood pressure has a 50% greater chance of developing hypertension than a child of two parents with normal blood pressure. That risk rises to a 95% chance that a child of two parents with hypertension will have high blood pressure as an adult (Taylor, 1995). The same is true for other important aspects of health (Baum, Krantz, & Gatchel, 1997; Braunwald, 1994).

Individuals can be genetically or biologically predisposed to be obese (Ezzell, 1995; Faust, 1980; Hakas, Gajiwala, Maffei, et al., 1995; Keesey, 1993), have high cholesterol (Kannel, Castelli, & Gordon, 1979; Stoney, Matthews, McDonald, & Johnson, 1988), to smoke (Silverstein, Kelley, Swan, & Kozlowski, 1982), and to drink alcohol (Dawson, Harford, & Grant, 1992; Morse & Flavin, 1992; Pickens & Svikis, 1991). While we know that these health factors are the result, in most cases, of an interaction between any genetic or biological predisposition and the environment (Brownell & Wadden, 1992), the question that arises is exactly how much can the environment reverse what we are genetically predisposed to be or do. Thus, an interesting issue that evolves from this type of program is whether or not employees perceive a health benefits system that attaches incentives to the level of health as fair.

In this study, we are concerned with the effects of an incentive-based health benefits program on employees, specifically, employee fairness perceptions. Two hospitals were surveyed, one employing an incentive-based health benefits program and the other using a traditional health benefits program. With these two samples, we will

investigate the perceptions of fairness, control over health, employee commitment to a healthy lifestyle, and health-related behaviors. Since a number of features of the incentive system itself influence the nature of the hypotheses regarding reactions to it, we will first give a brief description of the program and then review the research relevant to this study.

Rewarding Health Behaviors: A specific case

This study will look closely at an incentive-based health benefits program, which was created to encourage positive health behaviors among employees. This program assumes that employees have direct control over their health behaviors and awards financial incentives for healthy behaviors and overall good health and disincentives to the unhealthy.

Targeted Health Behaviors. To determine employee health level or health risk, this program evaluates all employees and their dependent spouses on eight health-related dimensions. The following dimensions are listed in order of decreasing importance when used for assessing health risk: blood pressure, cholesterol (HDL) level, body fat/muscle tissue ratio, cardio-vascular fitness level, tobacco usage, motor vehicle safety, alcohol consumption and nutrition.

Health Quotient. Employees' and any dependent spouses' health levels are evaluated on the eight aforementioned health dimensions once a year in the summer during a two-week assessment period. Four of the health dimensions are assessed with objective means. In particular, blood pressure is measured using a pressure cuff, cholesterol level is measured with a blood test, body fat/muscle ratio is determined with a caliper test, and cardio-vascular fitness is assessed by heart-rate during a timed walk.

The other four health dimensions are measured with self-reports of tobacco and alcohol use, motor vehicle safety, and nutrition behaviors.

Approximately one month following the health assessment employees receive their and their spouse's "health quotients" which are their composite scores (or averaged composite scores if the employee has a dependent spouse) based on all the health measures. Health quotient scores range from -25 to +25. The composite score is calculated by weighting the scores within each health dimension and summing them. All of the objectively measured health dimensions are given more weight than the subjectively reported dimensions. This is an important distinction since the objectively measured health dimensions may be more difficult to change than those that are subjectively measured. For example, a change in nutrition habits can be made over the time span of a few weeks or months, but those changes may not affect cholesterol level and blood pressure for a long time.

In addition, when employees and dependents are notified of their health quotients they are given a description of their scores on each of the individual dimensions, and are provided with individualized suggestions directed at improving their overall health. Employees are also provided discounts to athletic clubs and on the purchase of fitness equipment to encourage more healthy lifestyles. Within hospital facilities, employees are encouraged to participate in health programs offered to improve nutritional habits, stop smoking, and improve cardio-vascular fitness.

Reward System. When employees receive notification of their and their dependent spouse's health quotients from the organization they are also given the incentive (or disincentive) amount they will receive with every paycheck. The health

quotient, which ranges from -25 to +25, directly translates into the monetary incentive or disincentive each employee will receive throughout the coming year. For example, an individual with a health quotient of +15 will receive an extra $15 per bi-monthly pay check totaling $30 per month. On the other hand, a health quotient of -15 would mean that a deduction of $15 will be taken from the employee's bi-monthly paycheck. If, in addition, the employee receiving the $15 deduction had a dependent spouse who was covered under the same health insurance policy and this spouse had a health quotient of +15, the employee would receive no deductions nor incentives as their two health quotients would be averaged to determine the incentive amount. The health quotient scores each individual receives will be in effect for one full year following the annual health assessment. Not until the next health assessment will the individual be able to improve his or her health quotient and modify his or her incentives (or disincentives).

At this point, it might be useful to discuss what is meant by an incentive or disincentive. Technically, we could refer to the monetary outcomes in this study as either rewards/punishments or incentives/disincentives. We have chosen the later. While the monetary gains or losses are assigned based on an individual's health level and are kept for an entire year, we believe that they serve as an incentive for the individual to improve his or her health further over the coming year to either reduce the amount of disincentive the person received or increase the amount of incentive the person received. For the remainder of this paper, the terms incentive and disincentive will be employed to describe the monetary gains or losses each employee receives associated with his or her health quotient.

Exceptions. Each employee participating in the health benefits program (nearly 100% of the employees) has a health quotient; however there are a few exceptions made for employees who are physically unable to participate or who have an uncontrollable health condition. For instance, a physician's excuse for the fitness walk may be accepted for those physically incapable for various reasons. In the cases when individuals are exempt from completing a part of the assessment, they are automatically assigned a score of zero (no monetary gain or loss) for that dimension which is then summed with their scores on the other dimensions. The system also provides an option for those who choose not to participate in the health benefits system. Those who choose not to will be assigned a health quotient of -25, a pay deduction of fifty dollars per month for the entire year.

Reactions to the System

Understanding the structure and nature of this incentive-based benefits system is of importance as we investigate the implications these types of programs have for employees. The system of differentially awarding employees based on their overall health level will be investigated in this study. In particular, we are interested in the effects these types of systems have on employee fairness perceptions and employee perceived control over the system and the effects that these two have on employee health-related actions. In an attempt to understand the relationships between these variables, a model is proposed where fairness and perceived control dually affect employee commitment, which influences an individual's behaviors. We believe that individual perceptions of fairness and perceived control are both determined, in part, by the benefits system the organization employs.

In the next few pages, research providing the theoretical foundation for the present study will be presented. First, a brief review of the research explaining the effects of incentives on employee behaviors will be provided. Following that discussion, a review of some commitment research will be presented. Subsequently, research on both fairness and perceived control will be presented. Throughout these literature reviews, research from the health psychology domain will be included due to the nature of our samples and the health benefits programs involved in this study. Following the review of this literature, we will discuss the hypotheses and models proposed for investigation.

Chapter 1

LITERATURE REVIEW

Incentives

For over a half a century researchers have studied the effects of various incentives on employee reactions to their work environments such as performance, job satisfaction, and organization or job commitment (Hull, 1943; Lewin, 1938; Skinner, 1969; F.W. Taylor, 1947; Thorndike, 1911; Tolman, 1932). The use of incentives is common in situations where the goal is to influence employee behaviors. The discussion presented on incentives will be rudimentary; however, for more comprehensive reviews on the use of incentives to influence employee behaviors refer to Campbell and Pritchard (1976), DeLeo (1972), Guzzo (1979), and Lawler (1971).

Incentives utilized in the work place can be financial or non-financial. Examples of various financial incentives range from the common (wage increases for good performance) to the unique and creative (free theater tickets). Non-financial incentives are frequently an economical option for organizations. Examples are additional time off for good attendance, promotions, job changes, or, simply, praise from a superior. Regardless of the type of incentive employed, if the system is designed carefully and clearly with employee concerns considered, incentive systems are often successful in their aim to influence employee behaviors (Eisenberger & Cameron, 1996).

The theoretical foundation for the use of incentive systems can be found in two of psychology's most prominent theories: expectancy and reinforcement theories. Classical reinforcement theory (Skinner, 1969) operates on the assumption that a rewarded behavior is more likely to be repeated than an unrewarded behavior. Incentive systems

are based on this theory, in that if you provide an incentive for a behavior it is more likely that the behavior will be demonstrated. This theory also applies to undesirable behaviors. For instance, unwanted behaviors can be discouraged through either punishment or reinforcement of the desired alternative behavior. Expectancy theory (Vroom, 1964) is similar to reinforcement theory except it predicts that individuals will consider the relative value of the promised outcome(s) and evaluate the likelihood of achieving the behaviors necessary for the outcome when deciding how to act. For incentive systems this theory suggests that individuals will evaluate the promised outcome for desirability and then decide whether or not those outcomes are worth the effort required to attain the outcomes. Expectancy theory, then, would explain why, in some cases, incentive systems do not work for certain individuals.

Beyond expectancy and reinforcement theories, there is another explanation for the effectiveness of incentive systems. When incentives are made salient before behaviors are exhibited they provide a goal for individuals to strive for, given the goal is desirable. Once the desired behaviors have been attempted, individuals receive feedback about their performance through the receipt or withholding of the promised incentive. In the workplace, research has found that incentives are effective when they provide feedback to employees about their job-related behaviors in a positive way and provide employees with goals to strive toward (Locke & Latham, 1990; Pritchard, Jones, Roth, Stuebing, & Ekeberg, 1988).

In the workplace, incentives are often tied to behaviors relating to employee performance. Meta-analyses by Guzzo, Jette, and Katzell (1985) have shown that the use of incentives has an average effect size of .57 standard deviations on employee

performance. However, in all situations, the strength of the incentive depends on the circumstances at the time of implementation, the behavior to be influenced, and the methods used (Eisenberger & Cameron, 1996). Little is known in the field of industrial and organizational psychology about the effects of incentive systems on employee health level and the subsequent effects on other work-related behaviors. There does exist, however, a large body of research in the health psychology domain about the effects of various incentive systems on health-related behaviors. We'll talk now about a few of those studies, focusing on those that examined smoking and alcohol use, two health behaviors that are measured in the incentive-based health benefits program involved in this study.

Given that smoking is the single most modifiable health risk factor for disease (Baum et al., 1997) it is no surprise that quite a bit of research has been directed at incentives that may help encourage people to quit. One of the first studies to investigate the effects of incentives on smokers was run by Bernstein and Glasgow (1979). They provided monetary incentives to people provided that they quit smoking. Each day the researchers met with their participants and, if a blood test showed no nicotine in their systems, they were given a monetary sum. The incentive system showed good success at the early stages, but as time went on and the blood tests became more erratic the monetary incentive became less powerful. They concluded that monetary incentives were a good method to get people to quit smoking, but not for long term maintenance. Most other research endeavors directed at encouraging smoking cessation have been directed at biological techniques and have met with greater success (Baum et al., 1997; Silverstein et al, 1982).

Another leading cause of death and illness is alcohol, and research has also been directed at reducing alcohol consumption among alcoholics. Two specific studies seem directly applicable to our investigation as they investigated the effects of an incentive system that utilized both self-given rewards and punishments (Bigelow, Libson, & Lawrence, 1973; Griffiths, Bigelow, & Liebson, 1978). They placed alcoholics into five different groups. The two groups that interest us involve the self-reward group and the self-reward/self-punishment group. Individuals within these groups were given suggestions about how and when to reward or punish themselves, but were given the opportunity to decide for themselves when and what incentive methods to actually employ. These two groups experienced almost identical reductions in alcohol consumption, reported more sobriety than the three other groups, and maintained their soberity for the longest period. However, as in the case of smoking cessation methods, the aversive biological programs seem to be the most effective (Dawson et al., 1992; Pickens & Svikis, 1991).

Overall, research suggests that an incentive-based benefits system may be a powerful tool when attempting to encourage employees to behave in a more healthy manner. However, employee commitment to improving or maintaining healthy behaviors must be present and issues of the fairness of the system must be addressed before any conclusions can be drawn concerning the effectiveness of and reactions to these types of programs.

Commitment

Before employees will modify or maintain their health-related behaviors to improve or maintain their overall health, research suggests that they must be committed to improving or maintaining their health. There are several motivation/commitment theories in health psychology that explain when and why people choose to (or not to) modify their health-related behaviors. We will discuss two of the most popular and empirically supported.

The first theory is called the Health Belief Mode, or HBM for short, and was created by Janz and Becker (1984). They proposed the model to explain why people do or do not engage in healthy behaviors. There are four specific antecedents that they believe determine motivation and commitment to performing healthy behaviors. The first determinant is perceived susceptibility and relates to whether or not an individual believes that he or she is likely to develop any health side effects due to his or her behaviors. Next, and related to the first dimension, is perceived seriousness and relates to whether or not an individual believes that any side effects would be serious or life-threatening. Once the individual perceives that some outcomes of his or her behaviors are likely and serious, he or she has to believe that changing his or her health behaviors would decrease the likelihood that he or she would develop the side effect or illness. Finally, the individual has to believe that the benefits associated with changing his or her health behaviors would outweigh the sacrifice of giving up his or her present health behaviors. As an example we can consider a smoker. For the individual to quit smoking he or she has to believe that smoking is related to lung cancer and that if he or she did develop lung cancer the consequences would be quite serious and possibly life-

threatening. Before the smoker would actually commit to quitting he or she would have to believe that if he or she quit now the risks associated with smoking would be greatly diminished and that the decreased risk was worth any side effects he or she might experience after quitting. We'll talk more about this theory when we discuss individuals' perceptions of control over their health, one of our proposed antecedents of commitment.

Another theory that is very popular in health psychology for explaining when and why people initially commit to changing their health-related behaviors is the Theory of Reasoned Action (TRA) developed by Ajzen & Fishbein (1980). This theory was created as a general theory to explain the relationships between beliefs, attitudes, intentions, and behaviors. Similar to the HBM model (Janz & Becker, 1984), according to TRA people are under control of their behavior, and they base their behaviors on rational decision making processes. The most immediate influence on behavior is the intention to engage in the behavior. Two types of beliefs influence this commitment. First, commitment is influenced by an individual's attitude towards the behavior, whether he or she sees the behavior as favorable or unfavorable. The second influence on commitment is a more social factor called a subjective norm. Subjective norms refer to the perceived social pressure to perform, or not perform, the behavior. Relatively few large scale interventions have been based on TRA (Curry & Emmons, 1994).

In addition to discussing research linking motivation and commitment to health behavior change, it is also useful to look at other areas of commitment research. In general, commitment research focuses on improving work-related performance. For the sake of the present study, we will assume that processes influencing the display of health behaviors are similar to those influencing task/job performance. Both entail the

performance of certain behaviors relevant to the goal. Logically, then we can extend the assumption to conclude that employee reactions to a goal of improving health will be similar to one of improving any other aspect of performance. Before a discussion of the goal commitment research is begun, a cursory review of general goal setting research will be discussed.

Research studying the effects of goals on employee performance in a variety of domains has been quite prolific (Locke & Latham, 1990; O'Leary Kelly, Martocchio, & Frink, 1994). This research has repeatedly found that difficult, specific goals often lead to increased performance on simple tasks (Austin & Vancouver, 1992; Locke, Shaw, Saari, & Latham, 1981). However, employee commitment to the goal must be present before a behavioral change is implemented and maintained (Locke, 1968).

Goal commitment has recently received increased recognition in the literature as an important factor in the relationship between goals and performance. Hollenbeck and Klein (1987) have defined goal commitment based on the earlier work of Campion and Lord (1982) and Locke, Shaw, Saari, and Latham (1981). Goal commitment, according to Hollenbeck and Klein (1987), is "the extension of effort, over time, toward the accomplishment of an original goal and emphasizes an unwillingness to abandon or lower the goal" (p. 213). In this study, employees are given a goal of improving or maintaining their health both explicitly and implicitly through the incentive system.

In 1968, Locke was among the first to propose the moderating effects of goal commitment on the relationship between goals and performance by proposing that performance is only affected by goals when employees are committed to the goal. However, little research has been conducted to test this relationship (Hollenbeck & Klein,

1987). Regardless of the limited research conducted, it is very important to consider the effects of commitment on behaviors. As illustrated by Locke and Latham (1990), given the same goal, "it is not necessarily the case that all subjects are equally committed to their personal goals" (p. 216).

In conclusion, we will explore whether employees under each type of benefits system are committed to maintaining or improving their health levels. In addition, we will investigate whether the incentive-based group is more committed to improving their health-related outcomes than the traditional group. We believe that this will be the case as they are subjected to norms that encourage healthy behaviors, are encouraged to believe that they have control over their health, are given more control over their benefits costs, and are encouraged to take an active role in determining their own individual outcomes.

Fairness

Fairness is an individual's assessment of the appropriateness of outcomes received, the processes by which the outcomes were distributed, and the interpersonal treatment and information the individual received concerning the decision, process, or outcome of interest (Greenberg, 1994). Following the direction of this definition, the research relating to the distribution of outcomes, commonly termed distributive justice, will be reviewed first followed by a review of the literature on procedural justice, or perceived fairness of the process by which a decision is made.

Distributive Justice. The underlying assumption of distributive justice is that peoples' perceptions about the fairness of what they obtain (their outcomes) are strongly influenced by how they believe those outcomes are distributed across people. In

particular, those who invest more should receive more, where investments are broadly defined as putting in more effort, having more education, training or seniority, or any of a number of possible inputs. An individual's perception of the fairness of the distribution of outcomes is commonly explained through equity theory (Adams, 1965; Homans, 1961; Walster, Berscheid, & Walster, 1973). Equity theory operates on the premise that people believe that they should receive rewards consistent with their inputs relative to a referent comparison (Adams, 1965; Cohen, 1987), commonly someone in the same or a similar job.

An example illustrating the application of equity theory involves examining employee reactions to compensation. According to the theory, if an employee is working harder at a job than a peer is in an equivalent job, that employee will expect to receive higher outcomes, perhaps in the form of a bonus or praise for his or her hard work. However, if employees perceive that they are receiving too little in accordance with their outputs, these employees may compensate through a variety of behaviors (Greenberg, 1990a). Some notable compensatory behaviors are lowered job performance to the level of referent others and stealing company time, resources, or money (Greenberg, 1993b). On the other hand, if an employee perceives that he or she is earning more than peers who are working just as hard or harder, he or she may raise performance to maintain a feeling of equity or, more likely, change the person or people to whom he or she is making comparisons. The goal, in any case, is to maintain a feeling of equity through behavioral or cognitive modification.

Perceptions of equity or distributive justice in personnel selection arise from a combination of hiring expectations and the outcome of the hiring decision (Adams, 1965;

Gilliland, 1993). If employees feel that they were not hired because they were unqualified then no feelings of inequity or unfairness should arise. However, if employees feel that they were equally qualified for the job, but unhired for another reason, then feelings of injustice may arise resulting, possibly, in negative opinions of the organization. If employees feel unjustly hired, that they were unqualified, but hired for an external reason, we would expect that feelings of injustice would also arise resulting in, perhaps, increased performance, dissatisfaction, higher turnover intentions or lower organizational commitment (Gilliland, 1993). However, research suggests that this is not the case. Employees who receive positive or favorable outcomes may experience some initial feelings of injustice, but they quickly resolve these feelings by altering their beliefs of why they were hired. These studies suggest that employees who receive negative outcomes are much more likely to perceive distributive injustice than those receiving positive outcomes.

The key to this paradox is the outcome one receives. The outcomes related to a procedure or decision are critical to the formation of fairness perceptions (Brockner et al., 1994; Greenberg, 1987, 1990a, 1993b; Leventhal, 1976; Shapiro & Buttner, 1988). If an outcome is considered negative, it is far more likely that the individual will respond with feelings of inequity or unfairness than if the outcome is positive (e.g. Greenberg, 1987). Perceptions of fairness are manifested by the general tendency for people to perceive as agreeable those outcomes that best serve their interests.

If outcomes are positive, individuals are likely to consider the distribution fair according to egocentric or self-serving biases (Greenberg, 1983; 1994). Self-serving bias is a distributive justice term that explains how individuals often assume that they

deserve higher outcomes than referent others. Gilliland (1994), in his study on the distributive justice of a selection system, found that individuals who received the job were more likely to have positive impressions of the fairness of the selection system regardless of the job-relatedness of the process. Those who did not receive the job, but expected to, experienced increased negative perceptions of distributive justice when the system was obviously job-related and the decision to not hire was evident. In this study, a negative outcome, not getting the job, but expecting to, predicted negative distributive justice perceptions. The outcome influences an individual's reaction to a decision or process regardless of whether one is considering distributive or procedural justice perceptions (Shapiro & Buttner, 1988). However, the relationship between procedural justice and outcomes is quite complex with the treatment and information an individual receives when confronted with a potentially negative outcome mitigating some feelings of injustice (Brockner, Wiesenfeld, Stephan, & Hurley, 1997). The issues concerning procedural justice and outcome favorability will be discussed further when we discuss the nature of procedural justice in greater detail.

The distribution of outcomes is of interest in the present study because health-based outcomes are distributed differentially, which could cause feelings of inequity when employees feel that they are not receiving what they deserve. Employees who believe that their health quotients do not reflect their overall health may feel that they have been inequitably treated. However, there is another aspect of justice that may further facilitate our understanding of employee reactions to this incentive system. Researchers have also considered the effects of the treatment and information individuals

receive concerning the distribution of outcomes on fairness perceptions, employee behaviors, and attitudes (Greenberg, 1982; Greenberg et al., 1991).

Procedural Justice. According to justice theorists (e.g., Leventhal, 1973), the way in which outcomes are distributed across people is only one of two major sources of fairness perceptions; the other source stems from a broader set of conditions that guide the way in which people are treated when outcomes are provided to them and the process by which a decision is made. This is termed procedural justice or procedural fairness.

The information people have about the way rewards are distributed and the interpersonal style of those administering the outcomes are but two of the factors that combine to influence perceptions of fairness regarding procedures (Greenberg, 1994). These process-oriented sources of fairness incorporate factors involved in arriving at and carrying out decisions related to outcome distribution as opposed to factors related to whom the outcome itself is distributed (Thibault & Walker, 1978). Procedural justice is often referred to as the social determinant of justice (Bies, 1987; Greenberg, 1990a, b, c, 1993a, 1993b; Greenberg, Bies, & Eskew, 1991; Greenberg & McCarty, 1990).

These social factors not only are of interest as they affect general perceptions of the fairness of situations, but also because they may impact independently on the degree of positive or negative affect associated with outcomes. Peoples' acceptance of negative outcomes is affected by their beliefs about the fairness of the information they receive about the outcomes (informational justice) and the interpersonal conditions that surrounded the distribution of the outcomes (interactional or interpersonal justice) (e.g., Greenberg, 1983). This point is elaborated below.

Informational justice is related to how the rewards, decisions, or procedures are determined (Thibaut & Walker, 1975). Informational justice is what information an employee is given concerning how any outcomes (decisions, procedures, or rewards) that are salient to an individual are determined, distributed, or decided. The information an individual is given concerning an outcome has strong impacts on how a procedure or event is perceived. For example, Landy, Barnes-Farrell, and Cleveland (1980) found that employees' perceptions of the performance evaluation process were stronger determinants of their fairness perceptions than the actual evaluation, whether positive or negative. These findings suggest that instilling positive employee perceptions about procedures may lead to increased perceptions of fairness.

Procedures are perceived as fair when resource distributions are consistent across persons over time, free from bias, based on accurate information, correctable, representative of all recipients' concerns, and based on prevailing moral and ethical standards (Greenberg, 1987; Leventhal 1976, 1980). Resource distributions that are inconsistent with Leventhal's guidelines for fair procedures are found unfair (Barrett-Howard & Tyler, 1986; Greenberg, 1987; Sheppard & Lewicki, 1987).

Using fair procedures does not determine fairness perceptions alone. These perceptions are also likely to be affected by the perceived value of the outcome to form an overall perception of fairness. Greenberg (1987) found that in high and medium monetary award conditions all participants found the process fair. However, in low award conditions the procedure determined fairness perceptions. Thus in cases of unfavorable outcomes, perceptions of fairness may be improved by utilizing fair procedures. Using fair procedures alone is not enough to explain perceptions of

procedural justice. How individuals are treated, interactional justice, when presented with a novel situation or unfavorable outcomes may also play a role in perceptions of fairness.

As mentioned earlier, interactional justice may also affect employee perceptions of procedural justice. Interactional justice relates to the treatment individuals receive concerning a decision or new procedure. Negative outcomes were more readily accepted when employees felt that the decision-makers were sensitive to general employee views (Tyler, 1988), the decision-makers were honest (Bies, 1986), and employees affected by the decision or procedure were treated in a courteous and civil manner (Bies & Moag, 1986).

Greenberg (1990) found that employees who received pay cuts had higher perceptions of fairness when the situation was thoroughly explained to them with sensitivity and understanding than when the decision was simply presented without consideration. Other research also suggests that explanations for negative outcomes mitigate people's reactions to those negative outcomes (Cropanzo & Folger, 1989; Folger & Martin, 1986; Shapiro & Buttner, 1988) These studies once again showed that using honest explanations presented with sensitivity greatly reduced adverse reactions to negative outcomes including theft, lower performance, decreased commitment and lowered trust in the supervisor or decision makers (Greenberg, 1993b; Konovsky & Cropanzo, 1991). The preceding reactions to injustice present another aspect of justice research, the effects that fairness perceptions have on employee behavior.

Acceptance of negative outcomes is also facilitated by procedural justice attempts which include thoroughly explaining with sensitivity how and why a decision or

procedure was implemented (Bies & Moag, 1986; Brockner et al, 1994). Greenberg (1994) investigated the acceptance of a work site smoking ban and found that heavy smokers, those experiencing the most negative outcome, were strongly affected by procedural justice actions, informational and interactional attempts by the organization to facilitate acceptance. Whereas the nonsmokers, unaffected by the procedure, considered the smoking ban as fair and were thus unaffected by attempts to increase procedural justice perceptions. Thus, negative outcomes do influence fairness perceptions, but low fairness perceptions can be mitigated by attempts to increase perceptions of procedural justice. In addition, procedural justice attempts will have a greater impact on acceptance of negative outcomes when outcomes are more severe rather than less (Brockner et al, 1994; Shapiro et al, 1994). Another relevant finding suggests that feelings of resentment are triggered by the receipt of negative outcomes from a decision or procedure to accomplish a goal that could have been equally accomplished through a decision or procedure with less severe outcomes (Folger, 1986).

Overall, it is important that employees perceive aspects of their work environment as fair as the consequences of unfairness can be costly to organizations. There are a number of guidelines and research findings to suggest how to develop a fair system and to distribute outcomes so that they are perceived fair.

Perceived Control

When we discussed research suggesting that commitment had to be present before behaviors were exhibited we mentioned two theories in conjunction with the health psychology domain. The two theories both detailed different antecedents of commitment to changing behaviors. The second theory we discussed was the Theory of Reasoned

Action (TRA) and was developed by Ajzen and Fishbein (1980). This theory, as we discussed earlier, proposes two requirements for commitment, individual and norm beliefs in favor of the behavioral change, not specifically health behavior change. We do believe that these are requirements for commitment, but we think the first theory we discussed in the commitment section holds some especially interesting suggestions for our present research.

The Health Belief Mode, or HBM for short, was created by Janz and Becker (1984). As we described earlier, there are four requirements for commitment to changing health behaviors. The first two relate to whether or not the individual believes he or she will develop some serious side effects or illness due to some behavior and that any illness would be quite serious. The last requirement is that the benefits of changing relevant behaviors outweighs any inconvenience. However, it is the third requirement in which we are most interested. The third requirement for commitment is that the individual has to perceive that changing his or her health-related behavior would actually decrease the risk of becoming ill or developing side effects. This factor is called perceived control and in our study we believe that employees must perceive that they have control over their health-related outcomes before they will commit to changing their behaviors.

This notion of perceived control, while still relatively new to the justice and industrial/organizational psychology domains, has also been researched in conjunction with attribution theory (Weiner, 1985) in both health and educational psychology research (Baum et al., 1997). Attribution theory has been used to explain individuals reactions to their performance, whether good or bad. Attribution theory suggests that individuals attribute their successes and failures based on three general properties: locus,

stability, and controllability. Locus of attribution suggests that individuals decide whether their performance or health was due to something within themselves or something external to themselves, possibly within the environment (Heider, 1958). The second property that determines the attribution of causes is stability and refers to whether a cause is considered stable, i.e. constant, or unstable, fluctuating and not a permanent state (Weiner et al. 1971). The last property and the one of most interest in this research is controllability and suggests that certain conditions are subject to volitional control while others are not (Weiner, 1979).

The research surrounding controllability suggests that when something is considered under a person's control he or she is more likely to be motivated to try to control that behavior. The motivation to control those behaviors stems from an expectation that changing the behavior is possible and will lead to some positive (or negative) consequences for their actions (for a review see Weiner, 1985). These findings suggest several key points for the present research. If individuals perceive that they have control over their health levels they will likely be more motivated to try to change their health-related behaviors (i.e., more committed to change). In addition, if individuals perceive that they have control over their health levels and that any changes made will be detectable by the measurement methods they will be more likely to change their behaviors. When direct control over outcomes is perceived, as is possible in the present study, commitment to the program or decision should be evident (Lind & Tyler, 1988).

Placing control over outcomes into the hands of employees has some interesting implications for research surrounding employee perceptions of fairness in the workplace related to health insurance programs. As discussed in the auto insurance example

presented in the introduction, the health insurance considered in the present research is based on the assumption that individuals have control over their health. But individual control over many aspects of health may be limited. Research suggests that some portion of individual health is determined by, in part, genetics, not by the choices individuals make concerning their behaviors (Baum et al., 1997; Braunwald, 1994). Individuals within programs such as these may feel that even when they institute the changes suggested following their health appraisals they do not change their health (i.e., cholesterol, blood pressure, and body fat ratio) dramatically enough to affect their monetary outcomes. Proponents of these programs may counter this argument with the notion that there are five other aspects upon which an individual's health index is based that are directly under an individual's control: nutrition, motor vehicle safety, alcohol and tobacco usage, and fitness level. There are two counter arguments to that belief. First, research does suggest that both alcohol and tobacco use and addiction have some genetic and biological predisposing factors (Dawson et al., 1992; Morse & Flavin, 1992; Silverstein et al., 1982). Second, in the system to be studied here these five dimensions in conjunction were assigned less than half of the importance given to blood pressure, cholesterol, or body fat ratio when calculating the health quotient.

Returning to our discussion on fairness or justice perceptions, we know procedures or processes are considered fair when outcome distributions are consistent across persons over time, free from bias, based on accurate information, correctable, representative of all recipients' concerns, and based on prevailing moral and ethical standards (Greenberg, 1987; Leventhal 1976, 1980). If, in turn, individuals do not perceive that they have control over their outcomes they may also not perceive that the

procedures utilized prior to and during the distribution of outcomes are fair, that they are not consistent over time, not free from bias, not based on accurate information, and not correctable. We have argued here that many of these phenomena also are likely to operate with respect to behaviors related to displaying healthy behaviors. The basis for this position is that there is a strong expectation in the United States that employers will provide health insurance for their employees. Therefore, when a health insurance system is offered to employees that differs in a number of ways from "typical" employer systems and affects such an important outcome as money, that new system is likely to be judged in terms of fairness, especially when the outcomes are negative. Furthermore, when components of that system attach rewards to the levels of employee health, beliefs about personal control over health levels are likely to also affect perceptions of the fairness of the system. For this and other reasons, there was reason to believe that the degree to which employer health insurance systems are perceived as fair will relate to the way employees respond to health insurance systems. Specific hypotheses will follow.

Chapter 2

HYPOTHESES

The hypotheses and models that will be proposed in this study center around the issues of fairness, perceived control, commitment, and behavioral change in the context of an incentive system. We are very interested in the specific effects that the incentive system has on employee perceptions of fairness. To address these issues we will examine fairness from three distinct perspectives. First, we will examine the effects of four general variables on fairness perceptions. Following the presentation of those four propositions, we will present a framework for understanding the interrelationships between fairness, perceived control, and commitment as we believe that these three employee perceptions are critical when considering behavioral change. Finally, we will expand the discussion of fairness, perceived control, and commitment to include the effects of the incentive system itself.

The Roles of Outcome, Age, Income, and Accuracy Perceptions on Fairness Perceptions.

As we believe that fairness perceptions are very important in understanding employee reactions to benefits systems, we will begin by proposing several general variables that are expected to influence employee perceptions of fairness in this study. Specifically, we propose to investigate the effects of outcome, age, income, and accuracy perceptions on employee perceptions of fairness.

The Effects of Outcomes on Employee Perceptions of Fairness. Outcomes have long been accepted as an important aspect in the formation of fairness perceptions. Reviewing the literature discussed previously, we have evidence that individuals have a

tendency to possess self-serving biases (Greenberg, 1987) which lead them to perceive themselves as deserving the most positive outcomes. In line with theories of self-serving, or egocentric biases, Greenberg (1994), when investigating the effects of a work site smoking ban, found that individuals receiving negative outcomes were much more likely to perceive the process, situation, or outcomes as unfair than someone who receives more positive outcomes.

The outcomes in this study are especially relevant to justice perceptions. Each employee within the incentive-based system will receive an outcome. That outcome, as aforementioned, will vary from negative to positive twenty-five dollars. Based on previous research, it is expected that each individual's outcome will influence his or her perceptions of the fairness of the system.

H1: Within the incentive system, employees' perceptions of the fairness of their benefits system will be positively affected by the value of their individual outcomes.

Effects of Age on Employee Perceptions of Fairness. Because of the nature of the incentive program, an employee's age may influence his or her perceptions of the fairness of the benefits system. Research suggests that employees who are older may be less convinced of their ability to change their overall health (Baum et al., 1997; Taylor, 1995). With that in mind, expectancy theory (Vroom, 1964) would predict that employees who believe that they cannot change their health level should not expect that they would get the desired outcomes, more money, and would thus not attempt to change their health related behaviors. For older individuals this suggests that the system, which operates on the assumption that people can control their health, is not fair.

In addition, fairness research has repeatedly supported Leventhal's (1976) guidelines for fair procedures which specify that resource distributions must be free from bias if they are to be considered fair (Greenberg, 1987). A system that discriminates against those that believe they have little control over their health levels would be considered unfair.

H2: Perceptions of control will mediate the relationship between age and fairness perceptions such that older employees within the incentive-based system will believe that they have less control over their health levels than younger employees and subsequently perceive incentive-based benefits programs as less fair.

Effects of Income. In the situation under investigation, monetary outcomes are not individually assigned according to income level so that all participants experience equivalent levels of incentives or disincentives depending on their health quotient score. This aspect of the incentive program leads to a situation where even though some employees are receiving the same outcomes, they are likely to perceive the personal value of the outcome differently, depending on their personal financial state. For example, losing $25.00 per pay period for one earning $100,000 per year is likely to be seen as less serious than for someone earning $25,000 per year.

In addition, research does support the finding that individuals in lower socioeconomic groups are less educated about their health and may not perceive that the consequences of their health-related behaviors are as serious as they could be (Baum et al., 1997). Subsequently, individuals from these groups smoke more, consume more alcohol, are more obese, and exercise less than higher socioeconomic groups (NHLBI,

1994). If larger portions of lower socioeconomic groups are receiving disincentives or pay deductions, the incentive-based program may be viewed as unfair.

H3: Employee income level will moderate the relationship between health-related outcomes and employees' perceptions of the fairness of their benefits system such that the positive correlation between health-related outcomes and fairness perceptions will be stronger within lower income groups than within higher income groups for employees within the incentive-based system.

The Relationship between Accuracy and Fairness. The accuracy of the health measurement methods employed by the incentive organization to determine health levels can influence an individual's perceptions of fairness. An employee's perception that the measurement techniques are inaccurate is hypothesized to decrease that employee's perception of fairness. The literature reviewed on fairness was extensive, but there are common threads that run through all fairness research. Leventhal (1976) laid the foundation for much of the fairness research when he identified the characteristics of procedures that are considered fair. Leventhal's guidelines have received much empirical support (Barrett-Howard & Tyler, 1986; Greenberg, 1987; Sheppard & Lewicki, 1987). Included in those characteristics are resource distributions that are based on accurate information. In this case, health levels that are determined through methods which are perceived inaccurate would not lead to resource distributions that were based on accurate information, thus violating one of Leventhal's guidelines for fair procedures.

Measurement accuracy and reliability is of top concern for many medical professionals (Taylor, 1985). There are two areas of debate that are of interest in our

study. The first surrounds the accuracy of objective indicators of health. More specifically, in the incentive-based benefits system blood tests used to measure cholesterol levels may be perceived as inaccurate based on research suggesting that they are notoriously unreliable (Lenfant, 1986; NHLBI, 1994). Similar issues surround objective measures of body fat/muscle tissue ratio. Specifically, caliper tests used to determine fat/muscle tissue ratio are considered among the most unreliable measures available (NHLBI, 1994). A second set of issues surrounds the use of subjective or self-report measures of health behaviors (Taylor, 1985). People are likely to distort their health behaviors when given a self-report survey. For example, individuals asked to report their daily health-related behaviors were very inaccurate and, in almost all cases, underreported the amount of food and alcohol they consumed and overreported the amount of exercise they engaged in, even when they were not being judged or penalized for their reports (Jose & Anderson, 1990; Naditch, 1984).

Our incentive sample is one in which many of the subjects are probably very aware of these kinds of issues as they are closely tied to the medical field. Suspicions about the use of inaccurate measurement methods and faulty self-report surveys are likely to decrease an individual's perceptions of the fairness of the benefits system.

H4: Employees, within the incentive-based benefits system, who believe that the measures used to determine their health levels were more accurate are expected to report higher perceptions of the fairness of their health benefits system than those who believe the measurements were less accurate.

Hypotheses Relating to the Relationships between Fairness, Commitment, and Perceived Control

At this point we will present a model for examining the interrelationships between fairness perceptions, perceived control, and commitment. The model will be broken down into smaller hypotheses that address the specific paths specified in the model itself. An overall representation of the model can be found in Figure 1.

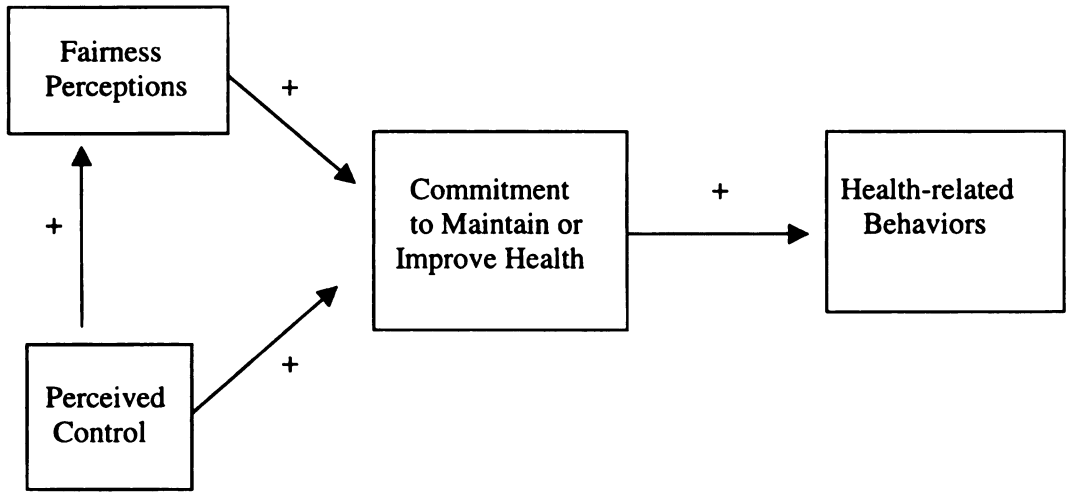


Figure 1.

Model representation of the relationship between fairness, perceived control, commitment, and health-related behaviors.

The Relationship between Commitment and Behavior. From the literature reviewed on commitment (e.g., Hollenbeck & Klein, 1987) and its effects on behaviors, we have evidence that not all employees are committed the same to a goal and that the level of commitment does, in fact, influence employee behaviors (Ajzen & Fishbein, 1980; Locke, 1968). In fact, employee performance is affected when employees are committed to the goal. For our study, this suggests that employees who report higher commitment to maintaining or improving their health will also report healthier behaviors and vice versa.

H5: Employees who are more committed to maintaining or improving their health will report performing more healthy behaviors than those less committed.

The Relationship between Fairness and Commitment. Equity theory (Adams, 1965), a central theory in justice research, suggests that if an individual believes that if he or she put in a certain amount of effort he or she would receive certain predetermined outcomes, he or she is more likely to be committed to providing the proscribed inputs.

For our study, this suggests that individuals who believe that their benefits system is fair are more likely to be committed to maintaining or improving their health in the future. On the other hand, individuals who perceive that the system is not fair because they will not receive a more favorable outcome with the proscribed inputs are unlikely to be committed to maintaining or improving their health.

H6: Employees who report more positive perceptions of fairness will report higher levels of commitment to maintain or improve their health-related behaviors.

The Relationship between Perceived Control and Commitment. As described in the literature review, perceived control is an individual's belief that he or she has control over his or her outcomes. In this study, we are interested in employees' beliefs that they can control their health levels and, in the case of the incentive group, the monetary incentives received. Much of the literature reviewed previously relates to this hypothesis.

Health psychology has long been interested in why or why not individuals commit to improving their health behaviors. One model of intentions and behavior, the Health Belief Mode (Janz & Becker, 1984) proposed that, among other requirements, individuals must perceive that by changing their behaviors they have the ability to reduce the risk of developing serious side effects of illnesses. We propose that the same is true in our sample, that employees have to believe that modifying their health-related behaviors would actually improve their health before they commit to changing those behaviors.

Other support for this hypothesis comes from both fairness and motivation research. Support exists for the assumption that strong commitment should be present when employees perceive that they have direct control over their outcomes (Lind & Tyler, 1988). In addition, equity theory (Adams, 1965) and expectancy theory (Vroom, 1964) both suggest that employees who perceive that they have control over their outcomes through behavioral change are more motivated to attain those outcomes and devote more of their efforts to attainment. If control is not perceived, then commitment to modifying behaviors is not likely.

H7: Employees who perceive that they have more control over their health-related outcomes will report higher commitment to maintain or improve their health-related behaviors.

The Relationship between Fairness and Perceived Control. Support for the relationship between employee fairness perceptions and perceived control can be found by reexamining literature reviewed on equity theory (Adams, 1965) and procedural justice (Greenberg, 1987).

Equity theory would suggest that if an employee's behavior results in the desired outcome then he or she should consider the procedure fair. On the other hand, if an employee puts in a lot of effort and does not receive the desired outcomes, the system is likely to be viewed as faulty because he or she has not been equitably rewarded for his or her inputs.

Procedural justice research also suggests that something is considered fair if it is under an individual's control. If individuals perceive that they have control over their health the system would be believed to operate on a moral and ethical standard that is consistent across individuals (guidelines for fair procedures by Leventhal, 1976) and should, theoretically, be considered fair. Believing that one can change one's outcomes, improve one's health, should accompany positive perceptions of fairness, whether distributive or procedural justice.

H8: Employees who perceive that they have more control over their health-related outcomes will report more favorable perceptions of the fairness of their benefits program than those who perceive less control.

Putting the Pieces Together: Understanding How Incentive Systems Affect the Relationships between Fairness, Perceived Control, and Commitment

The following hypotheses are directed at understanding how the incentive-based health benefits system involved in this study would affect the predicted relationship

between perceived control, fairness perceptions, and commitment. Of specific interest are the effects of the incentive system on fairness perceptions.

To begin with, the effects of the incentive system on employee health behaviors, commitment, and perceived control will be proposed. Then, two alternative models of the effects of the incentive system on fairness perceptions will be proposed. The present literature does not clearly predict which of these would best fit the unique incentive system involved in this research.

The Effects of the Incentive System on Employee Health Behaviors. As previously discussed, incentive systems encourage employees to perform specific behaviors. Several theories explain why incentive systems have these effects.

Classical reinforcement theory (Skinner, 1969) operates on the assumption that if you reward a behavior it is more likely to be repeated. This suggests that there are two potential incentives inherent in the system under investigation that may encourage employee behaviors. Being healthy is an incentive to many and the addition of the monetary incentives is further encouragement to employees to improve or maintain their health.

Expectancy theory (Vroom, 1964) is similar to reinforcement theory and would also predict that if an individual expects to receive certain desirable outcomes in return for some behavior he or she is more likely to exhibit that behavior.

In addition, employees who are covered under the incentive system receive explicit feedback about their health and how to improve or maintain it. This fact should increase the differences between the two benefit type groups, such that those who are covered under the incentive-based program have both specific directions and the financial

incentive to improve their health. Research supports this hypothesis. Specifically, we discussed a study in the introduction which showed that individuals giving self-rewards and self-punishments reduced their alcohol consumption significantly more than their control peers or those who solely received information on the adverse side effects of alcohol consumption (Bigelow et al., 1973; Griffiths et al., 1978).

The conclusion that can be drawn from this body of research is that the incentive-based system is set up to reinforce (both negatively and positively) employee health behaviors and those incentives should positively influence employee health-related behaviors.

H9: Employees with an incentive-based benefits system will report performing more healthy behaviors than those under a standard health benefits system.

The Effects of the Incentive System on Commitment. Once again, the individuals who are covered under the incentive-based health benefits system are expected to report higher commitment to maintaining or improving their health than those under a more traditional system. The logic behind this hypothesis is similar to that of hypothesis 9 which rests on the theories of reinforcement and expectancy, but support can also be found in the goal commitment, goal setting, and behavioral change research domains.

Briefly, goal commitment provides evidence for the proposition that difficult, specific goals best influence performance (Austin & Vancouver, 1996; Locke & Latham, 1990). In the present situation we have a goal that is either perceived or actually difficult (staying or becoming healthy), specific directions to improve, and a task that is

cognitively simple. These characteristics of the system lead us to expect that employee health behaviors will be higher among the incentive-based group.

In addition, we discussed the Theory of Reasoned Action (Ajzen & Fishbein, 1980) which proposed a model to understand why individuals do or do not behave in certain ways. They proposed two antecedents to commitment or intention to change behaviors. Both relate to our study. The first antecedent requires that the individual have a desire to change his or her behavior due to a personal belief that the new behavior is more favorable than the present, for any variety of reasons. The second antecedent requires that the individual perceive that it is socially preferred to perform the new behavior than the present behavior. We believe that the incentive group will have a stronger sense of societal pressure due to propaganda surrounding the program. In addition, we believe that the information and education involved in conjunction with the incentive-based program will increase a personal desire to behave more healthy.

In conclusion, the research suggests that employees within the incentive-based benefits system should report higher levels of commitment due to the decision/goal setting process and the nature of the program itself present in the incentive-based system.

H10: Employees with an incentive-based benefits system will report higher levels of commitment to maintain or improve their health-related behaviors than those under a traditional benefits system

The Effects of the Incentive System on Perceived Control. The presence of the incentive system is expected to have positive effects on employee perceptions of control over their health. Literature in support of this hypothesis is not known to the authors, but

support can be logically deduced by examining the nature of the system and considering the HBM model of behavior (Janz & Becker, 1984).

The incentive-based health benefits system is based on the notion that employees have control over their health. According to the Health Behavior Mode theory of behavior, control is a requirement for commitment and subsequent behavioral change. To perceive control, individuals have to perceive that a change in behavior would reduce the risk of serious illness or other health-related side effects. To encourage employees to believe that they have control, classes and programs are offered to direct employees in methods to improve their health and specific directions are given to each employee about how to improve their health when the assessment results are distributed. These employees receive more, theoretically, information about their health and improvement methods than those covered under a more traditional plan where health is not regularly discussed. Thus, it is logical to hypothesize that,

H11: Employees with an incentive-based benefits system will report more perceived control over their health-related outcomes than those under a standard health benefits system.

Two Alternative Models to Explain the Relationship between Incentives and Fairness. Understanding and hypothesizing the effects of an incentive-based system on employee perceptions of fairness is not quite as easy as the previous hypotheses. The literature in our domain is ambiguous concerning what we can expect in terms of fairness perceptions when confronted with a system such as the incentive-based system in our study. Although it is expected that the incentive system will impact perceptions of fairness, the impact may be either positive or negative. If the general expectations are

that being paid more if healthy are positive, we expect the contingent benefits to be more favorably viewed than the standard one. If, on the other hand the contingency is perceived as inconsistent with the expected norms for the distribution of health benefits, the relationship should be negative. Thus, at this time we cannot propose a specific hypothesis describing fairness reactions under the effects of an incentive system because both a positive and negative relationship appear equally likely to explain how the incentive-based system influences employee perceptions of fairness.

In the following paragraphs we will present literature and descriptions of the incentive program that suggest both that the program may be positively related to fairness perceptions and negatively related to fairness perceptions.

The incentive-based health benefits system has many of the characteristics that are frequently cited as fair procedures. The review of the literature that we provided leads the reader to believe that the system under investigation should be considered as fair and should further increase employee commitment to maintain and improve his or her health.

Both procedural and distributive justice research suggest that employees covered under the incentive-based system should report more positive perceptions of fairness than those employed under the traditional system. Leventhal (1976) provides the guidelines for fair procedures that suggest that resource distributions that are consistent, free from bias, based on accurate information, and based on prevailing moral and ethical standards will be considered fair. All that we have discussed concerning the design of the incentive-based system under investigation suggests that these requirements were upheld. While it is potentially true that these are all present in the traditional benefits system, we

believe that it is possible that these issues are more salient in the incentive-based sample as their benefits system is outside the norm and probably subject to closer inspection.

As was discussed in the literature review of fairness/justice theories, there are two distinct types of procedural justice: informational and interactional justice. This system may produce high reports of both from employees within the incentive-based system. Employees within the incentive-based system spend a lot more time discussing and learning about their benefits system than those within a traditional system. Also, specific departments are set up throughout the organization that cater to employee needs and concerns about the incentive system. Both of these aspects of the incentive-based system should lead employees to perceive their system as more fair than those under a traditional system.

Finally, distributive justice is often represented by equity theory (Adams, 1965) which would suggest that those who put more into the system, by taking better care of themselves, should get the most out of the system. The incentive-based system operates on this, and all the other aforementioned premises and thus should be considered more fair. This literature would lead us to hypothesize that employees covered under the incentive-based system will report higher perceptions of the fairness of their benefits coverage than those who are covered under the traditional program.

While hypothesizing that employees under the incentive-based system should report higher perceptions of fairness than those under the traditional program is correct according to much of the fairness research, there is also some evidence to suggest that this relationship may be negative.

As you may remember, Leventhal's (1976) guidelines state that a system is fair if it is moral and ethical, consistent across persons over time, based on accurate information, and free from bias. These guidelines are for all practical purposes included in the theoretical design of the system, but employee perceptions of these guidelines are not necessarily present.

We believe that employees may not believe that this system is moral and ethical for a variety of reasons. First of all, this is not a traditional method for providing employee benefits. In some cases, employees under this system have to pay for some portion of their health insurance and may believe that health insurance is one of their rights as an employee. Second, employees may not believe that they have control over their health. There are aspects of health that may or may not be considered under an individual's control (Baum et al., 1997; Braunwald, 1994). For instance, research suggests that obesity (Ezzell, 1995; Faust, 1980; Hakas et al., 1995; Keesey, 1993), blood pressure (Taylor, 1995), cholesterol (Kannel et al., 1979; Stoney et al., 1988), alcoholism (Dawson et al., 1992; Morse & Flavin, 1992), and cigarette smoking (Silverstein et al., 1982) are partly hereditary and not wholly under the control of the individual. Thirdly, some people may consider this system an invasion of privacy and health an area of personal life that an organization should not be involved.

In addition, employees may not consider the system consistent across persons over time. There are two reasons for these inconsistencies that we may want to consider. First, the health evaluations are done on different days of the week. Each day may have different climate and weather conditions, different assessment individuals, or different measurement instruments that may influence the evaluation of health each person

receives. In addition, some employees are given special considerations for health problems. Some employees may feel that these are undeserved or that they have similar problems and should also be given the same allowances.

Also, employees may perceive that the health evaluations that they receive are not based on accurate information. As we mentioned earlier, there may be concerns among employees about the measurement techniques. For instance, some employees may feel that their health evaluations were inaccurate due to assessor error, faulty measurement equipment, inappropriate techniques, or simply a bad day.

Finally, employees may not perceive that the incentive-based system is free from bias. We believe that it is possible that employees may feel that the system is biased against older individuals, those with chronic health problems, different ethnic groups, et cetera. It is possible that employees may believe that older people have a more difficult time changing their health. Also, individuals with special circumstances may not be as able to take the necessary steps to improve their health.

These issues could continue endlessly, but the point is simple. Even though the incentive system under investigation is designed to optimize the traditional fairness guidelines, those relevant characteristics of the system may not be interpreted as intended leading employees to believe that the system is not fair. This literature would lead us to hypothesize that employees covered under the incentive-based system will report lower perceptions of the fairness of their benefits coverage than those who are covered under the traditional program.

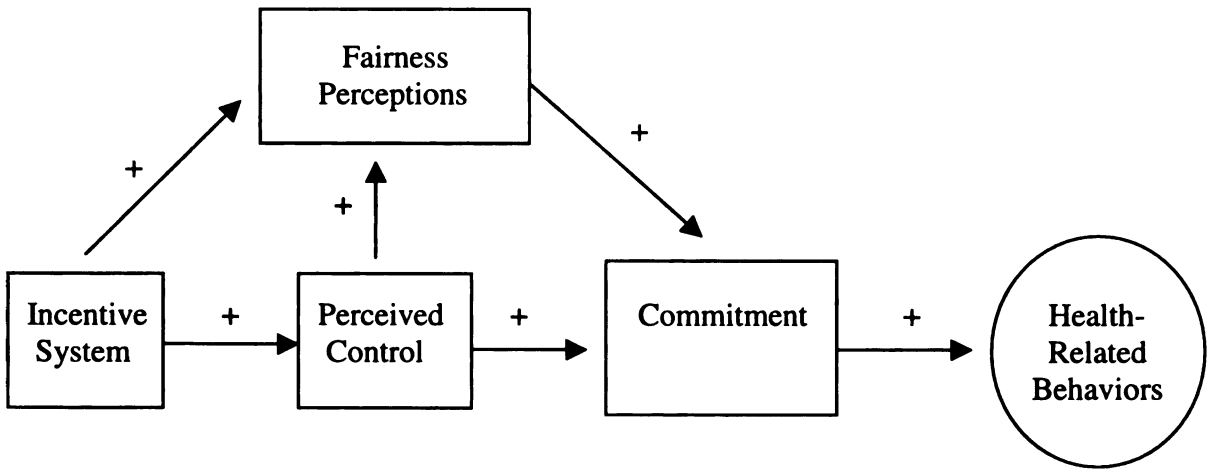
With literature and research existing in support of both a positive and a negative relationship between fairness perceptions and the incentive-based system, we can't be

specifically propose either hypothesis. Instead, we will propose an exploratory hypothesis directed at uncovering the relationship between the incentive system and fairness perceptions in our sample.

H12: Employees within the incentive system will differ in their perceptions of fairness than employees within the traditional benefits system. The direction of the relationship is unspecified, with either a positive or negative relationship plausible.

The negative and positive relationships are depicted in Figures 2 and 3.

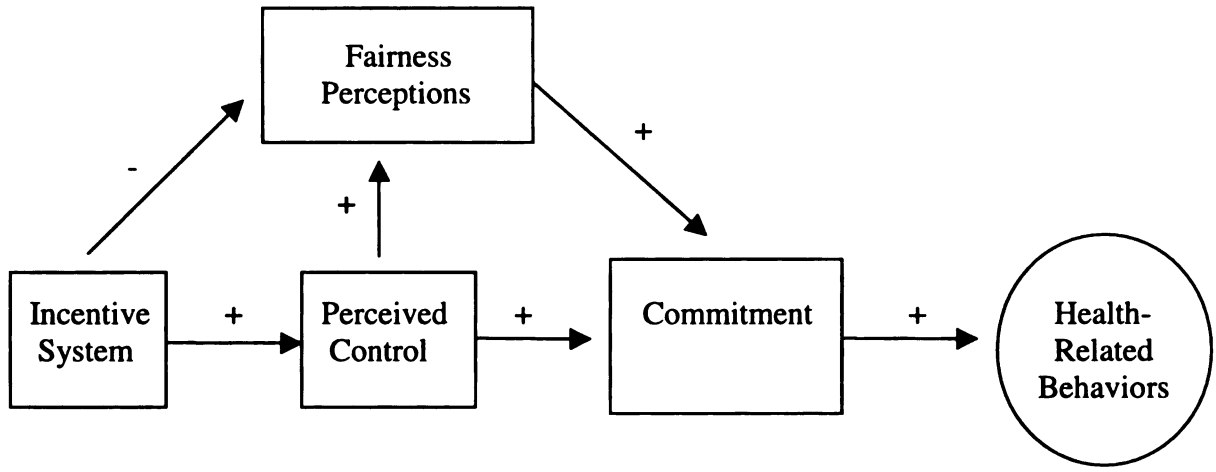
In the following section, the method employed to test these proposed hypotheses will be described including the method used to collect subjects and data as well as the measures adapted and developed.



Note. Traditional System is coded as 1 and Incentive System is coded as 2.

Figure 2.

Model depicting a positive relationship between incentive-based health benefits system and fairness perceptions.



Note. Traditional System is coded as 1 and Incentive System is coded as 2.

Figure 3.

Model depicting a negative relationship between incentive-based health benefits system and fairness perceptions.

Chapter 3

METHOD

Sample

In this study, data were collected from a sample of employees from a hospital in the mid-west using an incentive-based health benefits system (N=243) and another sample of hospital employees in the same city that provided employees with traditional health insurance (N=273). Approximately 5000 people were employed by the hospital using the incentive-based program at any given time. From a list of current employees a sample of 800 employees were randomly selected. A check of personnel records indicated that only 524 of these were full time employees eligible for participation in the health care system. Therefore, this latter sample was considered the initial sample. Of those in the sample, 243 provided useable data. Table 1 illustrates the similarities between the sample and the entire hospital. These data suggest that the sample is reasonably representative of the entire hospital workforce. The sample is composed of a slightly higher percentage of upper-level employees who are likely to be more highly paid.

Within the hospital utilizing a traditional benefits system 500 employees were randomly selected from a work force of approximately 2800 employees. Two hundred seventy-three responded. Table 2 illustrates the demographic makeup of those respondents. No data were available about the demographics of the entire hospital. Since this hospital and the incentive one were located in the same large city and in the same general area they drew from the same labor force. There is no reason to suspect that their willingness to volunteer would not be similar in both hospitals. Therefore, it

seemed reasonable to conclude the sample in this hospital represented reasonably well, the work force from which it was drawn just as was the case in the incentive hospital. In both samples, any respondents who were not employed in full time positions were eliminated from the study. Both samples contained high percentages of female respondents.

Table 1.

Demographic Characteristics of Sample with Incentive-based Benefits.

Demographic Characteristics	Sample	Entire Hospital Population
Female	75%	76%
Ethnic/Race (% White)	95%	94%
Mean Age	41.3	Data Not Available
Job Type:		
Management	14%	9%
Professional	16%	12%
Registered Nurse (RN)	16%	19%
Technical	18%	16%
Office/Clerical	26%	31%
Maintenance	11%	13%

Table 2.

Demographic Characteristics of Sample with Traditional Health Benefits.

Demographic Characteristics	Sample
Female	74.5%
Ethnic/Race (% White)	95.5%
Mean Age	39.76
Job Type:	
Management	14.0%
Professional	14.8%
Registered Nurse (RN)	16.0%
Technical	17.7%
Office/Clerical	25.9%
Maintenance	10.7%

Incentive-based Program Description

As was mentioned earlier, in the hospital using the incentive-based health benefits program, a health assessment evaluated health level by evaluating employees and their dependent spouses on eight health-related dimensions. These were: blood pressure, cholesterol ratio, body fat/muscle tissue ratio, cardio-vascular fitness level, tobacco usage, motor vehicle safety, alcohol consumption, and nutrition once a year during a two-week assessment period. The first four of these eight health dimensions were measured with physiological measures or a timed walk, and the last four were assessed by self-report.

The assessment occurs once a year during a two-week period. During that period all employees and their dependent spouses covered under the incentive-based health benefits system are asked to schedule an appointment for their assessment. During that assessment each of the eight health dimensions are assessed through either self-report or objective measures. (For a detailed description of the assessment procedure, refer to the "Health Quotient" section in the introduction.)

Employees were provided feedback on their overall health level and suggestions for improving their health status. In that feedback, employees were notified how much money they would be charged or awarded based on their health and their spouses' health levels. Employees were also encouraged to participate in health programs within the hospital, such as smoking cessation and weight loss, and were provided discounts on health equipment and club memberships. Employees and spouses were provided with the methods to try to improve or maintain their health.

The program was actually introduced in 1993 when employees were informed of

the new health benefits system that would be officially started in 1994. At this time, they were encouraged to go through the annual health assessment so that they could, if they chose, work on improving their health levels before the actual start of the system. Employees who did go through the health assessment that first year were given their health quotient scores as if they would in the coming year and were informed of the amount of their incentive (or disincentive). Then, in May of 1994, all employees went through their first official health assessment. The health quotients calculated at the time were applied to their 1995 salaries. We surveyed the employees during the summer of and fall of 1996. At this time, the employees were well into their second year of the new benefits program and were either going through or had gone through the assessments for 1997.

Procedure

The procedure for data collection differed somewhat, depending on the hospital. We will describe the procedures separately for each hospital sample.

Procedures Followed in the Hospital with the Incentive System. As was mentioned in the description of the sample, 524 persons were randomly identified from the list of full time employees in the hospital - the employees eligible to participate in the health care program. From these individuals, two sets of data were collected. One set was collected from a survey instrument that was designed to tap employee beliefs and expectations as well as self-report measures of health and demographic characteristics. The exact nature of these variables will be described later. The second set of data was obtained from company records. These included the employees' health assessment scores and a number of other personnel records. These too will be described later.

Procedurally, the important point is that data were collected from two sources, the employee and organizational records, and the data had to be collected in a manner that these two forms of data could be paired for each individual, after the participants gave us explicit permission to do this. The variables for which it was done under the subheading of measures in this Method section. Let us turn to the procedure for collecting survey data.

Two methods for collecting survey data were used in this sample. The first involved an on-site administration and the second method involved an inter-office mailing. All 524 employees received an interoffice letter from the researchers describing the nature of the study and inviting their participation (See Appendix A). This letter explained that the researchers would be on-site at the hospital to distribute the surveys during a twenty-four period approximately one month later. All employees were requested to attend if possible and their supervisors were notified by human resources within the hospital that all employees should be excused from work for one hour if at all possible to complete the survey. Within this same mailing, a postcard was included that allowed employees to indicate whether they would be able to come to the on-site survey location on a specific date or would like to have the survey mailed to them. In a separate mailing, the CEO of the hospital wrote a letter requesting that all employees invited to participate in the study do so for the good of the hospital (See Appendix A).

The procedure for administering the survey on-site focused on insuring employee privacy while still insuring that the researchers could link these survey data to organizational records. Each participant received an envelope containing the survey and other relevant information. Within the envelope, respondents were given two letters, the

survey, a consent form, and a large envelope in which to seal the completed survey. The first letter was from the CEO of the hospital encouraging employee participation and explaining the benefit of this survey to the organization (See Appendix A). The second letter explained the purpose of the survey and that the researchers were from Michigan State University and are independent from the hospital. (See Appendix A) In addition, this letter stressed that participation was voluntary and explained the necessity of the consent form. To gain access to employee records for employees covered under the incentive-based system we asked all participants to complete a consent form specifying which information within their employee records we would utilize. (See Appendix B.)

A number was printed on the survey and the consent form to serve two purposes. First of all, we needed to be able to link up survey responses to hospital data on employee health, specifically the health quotient. At the same time, we also needed to link up survey responses to other employee data such as absenteeism and other demographic information. The number also allowed us to avoid requiring participants to print their name on the survey itself. Confidentiality was strongly stressed; employees were assured that no one in the organization would be able to identify their responses. In addition, the organization required that we complete a legal confidentiality agreement between the insurance provider and the ourselves that insures that all data would be used responsibly and would be securely kept in both a locked cabinet and stored without any identifying names attached.

Employees were given as long as necessary to complete the survey. Once completed, the survey was to be placed in the envelope with the consent form, and given

to the researcher present. At this time, the researcher made certain that the survey was completed and the consent form signed.

At the scheduled on-site survey date, turnout was lower than expected. Only 83 employees providing complete data. Therefore, an alternative survey method was implemented which involved a mailing of the survey to all employees in the sample who did not complete the survey during the on-site administration or who previously requested a survey be mailed to them.

All those who had not yet completed a survey were contacted through interoffice mail. Included in the envelope were two letters, a survey, and a stamped return envelope. The first letter from the CEO was the same as that during the on-site survey administration. (See Appendix A.) The second letter was slightly different and explained what this mailing was and why it had been done in response to the low on-site turnout. The surveys were numbered as described for the on-site administration. Since this was a mailing, it was possible for the researchers to assign participants numbers prior to the mailing so that we would know who had responded and who had not. In addition, in cases where the consent form was returned unsigned, the researchers had a way to identify who that survey belonged to and contact them in the hopes of obtaining a signed form. Once again, participation was voluntary.

Employees were encouraged to complete the survey as soon as possible and mail it in the provided envelope to the researchers at Michigan State University. All questions were directed to the researchers and a telephone number was provided. (See Appendix D.)

Procedures Followed in the Hospital with the Traditional System. The survey administration in the hospital with the traditional benefits program differed slightly from that of the hospital with the incentive-based program for two reasons. An on-site survey administration was not conducted. Also, we did not need to collect any data from personnel records as there was no health assessment done in conjunction with this benefits program. The data collection method will now be described.

Five hundred employees were randomly selected from employee records. All employees in the sample were full-time employees covered by the health benefits program. All five hundred employees were sent a package at their residences containing a letter from the CEO of the hospital, a letter from the researchers, a consent form, a survey, and a stamped return envelope. The letters were almost identical to those sent to the first hospital. (See Appendix A.) The survey itself was slightly different due to the fact that these employees were not covered by the incentive-based health benefits program. The consent form was a formality that allowed us to simply use the collected survey data and provided the researchers with the opportunity to explain that the survey was voluntary and that confidentiality would be guaranteed since no personnel record information would be accessed. (See Appendix C.)

The respondents were instructed to complete the survey in a timely manner. Once completed, the surveys were to be placed in the pre-addressed stamped envelope along with their completed consent form. Any questions were directed to the researchers and a telephone number was provided. (See Appendix E.)

Measures

Unless explicitly stated, all variables described below were assessed on the employee surveys. In the following paragraphs each of the measures utilized in this study will be discussed in relation to the construct they were used to assess. First, fairness measures will be discussed followed by descriptions of the measures used to assess health behaviors, perceived control, commitment, accuracy, and various demographic variables.

Fairness. Employee perceptions of procedural and distributive justice were measured using adaptations from previous research based on work by Leventhal (1976, 1980) and Greenberg (1994). From this research, two broad aspects of fairness are evident and applicable to this study, procedural and distributive justice. All of the survey items used to assess fairness perceptions utilized a 5-point Likert-type scale anchored at "Strongly Disagree" and "Strongly Agree" for responses.

The distributive justice scale (3 items) was adapted from Greenberg (1994). An example item is, "The cost of the health care system is fair to staff members". Bias and consistency are more specific subdimensions within distributive justice. Six items were also adapted from Greenberg's work to assess consistency and bias. An example item assessing consistency is, "When it comes to health benefits, all employees are treated the same". An example item from the three-item scale measuring bias is, "The health benefits system is biased against those with uncontrollable health problems. (Refer to Appendix F for a listing of all items.)

Procedural justice was assessed through two types of questions adapted from Leventhal's guidelines (1976, 1980). A total of 16 items assessed interpersonal and

informational justice, two aspects of procedural justice. Interpersonal justice was assessed with seven items relating to personal treatment or social sensitivity. An example item is, "When I have a question or need to talk to someone about health care benefits, I am treated with respect and dignity". The other aspect of procedural justice, informational justice, assessed the employee's ability to question his or her health quotient score (5 items) and how much justification an individual receives concerning the nature, functioning, and rationale behind the use of the benefits program (4 items). An example item dealing with the chance to change or correct problems is, "When I disagree with something regarding the health care system, there is an appeal process that is fair". (See Appendix F for a complete listing of all survey items.)

Overall, there are 25 items assessing fairness perceptions, 9 items for distributive justice and 16 for procedural justice. To verify that the created items actually measured the aspect of justice they were written for and that the items could be factored into distributive and procedural justice, we were interested in investigating the factor structure of the set of items.

To investigate the factor structure of these 25 items, exploratory factor analyses with varimax rotation were conducted in both the incentive and the traditional samples. The samples were kept distinct at this stage due to concerns that the fairness constructs would be different in the two samples. Specifying the extraction of two factors, each sample created two different factor structures. (Refer to Appendix G for the Varimax rotated factor loadings of the 25 items on the two factors for each sample.) The emergence of two different factor structures was surprising. We expected 1 or 2 factors

based on the literature from which the items were chosen and expected the factor structures to be similar within the two samples.

Due to the nature of the hypotheses, desire to compare responses across samples, and our specific interest in the incentive system itself, we decided to apply the factor structure of the incentive system to the traditional system. To this end, we first dropped those items that loaded on both or neither factor in the factor analysis on the incentive sample. The decisions to drop items were based on item loadings. For instance, an item that loaded highly or similarly on both of the factors was dropped as was an item that loaded below .4 on both factors. In addition, at this time, we removed the two items that were present in the incentive data set, but not the traditional survey. These two actions left us with 8 items on the first factor (items 2, 3, 4, 5, 6, 8, 10, and 20) and 7 on the second (items 1, 12, 13, 14, 15, 16, and 19). (Refer to the table in Appendix G labeled "Secondary two factor solution" for the incentive group). Upon inspection of the content of these items we identified the nature of the factors themselves to be distributive justice for the first and procedural justice for the second. The items themselves can be found in Appendix F.

Once the two factor solution was finalized, we applied the same factor structure to the traditional data set. Specifically, we deleted eight items from the 23-item pool and were left with 15 items, eight of which we assigned to the first factor (distributive justice) and seven of which we assigned to the second factor (procedural justice).

Internal consistency reliability estimates of the distributive justice dimension yielded alphas of .88 for the entire sample, .86 for the incentive sample, and .88 for the traditional sample. Internal consistency reliability estimates were also calculated for the

procedural justice dimension and yielded alphas of .92 for the entire sample, .84 for the incentive sample, and .93 for the traditional sample.

The scales themselves were highly correlated in the entire sample (r=.71, p<.01), the incentive sample (r=.56, p<.01), and the traditional sample (r=.74, p<.01).

Health-Related Behaviors. Data on participant health were gathered through both subjective and, in the case of the incentive system hospital, objective measures. Self-report items used to assess exercise/fitness and nutrition were adapted from Ribisl (1994). Items measuring stress, tobacco use, alcohol use, and motor vehicle safety were constructed for this study. The items were about specific behaviors such as, "I always buckle my seatbelt while I am driving or riding in a motor vehicle". Responses were indicated using a 5-point Likert-type scale with anchors at "Strongly Agree" to "Strongly Disagree". (Refer to Appendix H for a listing of all health measures.)

Overall, sixty-six items assessed six self-report health behavioral dimensions for both samples. While there were six different aspects of health represented in the items we believed that the dimensions would be highly related. For instance, individuals who exercise a great deal are probably more likely to eat a balanced diet and avoid tobacco products. Investigating the factor structure of these items would identify if, in fact, this was the case and the different dimensions of health were interrelated and could be considered as one indicator of overall health-related behaviors for the analyses.

An exploratory factor analysis with varimax rotation was conducted. Following the Kaiser normalization criterion guideline of selecting factors with eigen values above one, there were 13 factors present in the 66 items. (Refer to Appendix I for the varimax rotated factor loadings of these 66 items on the 13 factors.) The emergence of thirteen

factors was surprising because only six specific dimensions of health were assessed. Further investigation of the eigen values of the 13 factors facilitated an interpretation of these results. The eigen values of those thirteen factors were 13.81, 8.42, 5.62, 3.27, 2.54, 1.89, 1.74, 1.62, 1.55, 1.29, 1.24, 1.12, and 1.06 respectively. The first factor accounted for 21% of the total variance and the second factor accounted for 13%. The ratio of the first factor to the second was 1.53. While this is below a ratio of 2, the most significant break occurred at the second factor with a reduction of 5 points.
Further evidence in support of using a single overall factor as an indicator of general health-related behaviors can be gained by investigating the dimensions more closely. All of the dimensions are correlated significantly with the overall health-related behavior composite (Table 3) and with the objective measures of health (Table 4). Thus, for the purposes of our analyses and hypotheses only one factor will be utilized in all analyses. For the one-factor solution, internal consistency reliability estimates yielded an alpha of .93 for the entire sample.

Additional data were also available for the hospital using the incentive-based system. Data on cholesterol, blood pressure, cardio-vascular fitness, and body fat ratio had been collected by the organization over a two-year period. These data were used to validate the self-report measures that were available for both sites. The correlation between the composite subjective and objective measures was $\underline{r} = .37$ ($\underline{p}<.05$). (Refer to Table 4.)

Table 3.

Intercorrelations between Self-report Dimensions of Health Behaviors

Dimension	Mean	SD	1	2	3	4	5	6
1. Alcohol	3.46	.70	.43					
2. Exercise	3.13	.58	.02	.44				
3. Nutrition	3.57	.68	-.05	.40*	.58			
4. Motor Vehicle Safety	4.16	.53	.32	-.02	.16*	.56		
5. Stress	3.41	.54	-.01	.14*	.12	.08	.32	
6. Tobacco	3.50	.93	-.05	-.15*	.01	.16*	-.20*	.45

Note. The correlations between the specific dimension and the overall composite of self-report health behaviors are provided in the diagonal and are underlined. All correlations marked with an "*" are significant at $p<.05$

Table 4.

Intercorrelations between Self-reports of Health Behaviors from the Surveys with Health Behaviors Measured as Part of the Health Assessment in the Incentive Hospital.

	Health Assessment Measures								
	Subjective				**Objective**				
Survey Reports of Health Behaviors	Alcohol Use	Nutrition	Vehicle Safety	Tobacco Use	Cardio-Fitness	Blood Pressure	Body Fat	Chol. Ratio	HQ
Alcohol Use	**.29****	-.01	-.06	-.02	-.17*	-.06	-.14*	-.12	-.16*
Nutrition	.17*	**.40****	.05	.10	.17*	.08	.25**	.05	.24**
Safety	.20**	.14*	**.11**	-.03	-.14*	-.06	-.15*	-.17**	.-.16*
Tobacco Use	.04	.06	.08	**-.06**	-.02	-.08	.01	-.03	-.03
Exercise	.03	.24**	.001	.21**	**.40****	.25**	.34**	.25**	.42**
Stress	.04	.03	.06	-.00	-.07	.01	-.07	-.06	-.07
Overall Health	.23**	.32**	.07	.08	.06	.05	.10	-.04	**.37****

Note. Underlined correlations are the correlations between those measures from the hospital's health assessment that most closely match our survey of self-report measures. Correlations with "**" are significant at $p<.01$. Correlations with "*" are significant at $p<.05$.

Perceived Control. Employee perceptions of control over health-related outcomes were assessed through a series of statements developed for this study. As mentioned previously, each individual employee's overall health was evaluated by the organization with the incentive-based benefits system using eight health-related dimensions: blood pressure, cholesterol, body fat, fitness, tobacco use, motor vehicle safety, alcohol consumption and nutrition. These eight were the behaviors or aspects of an employee's health that the incentive system desired to impact in a positive way. It was reasoned that a necessary condition for this to occur was that the employee should believe he or she could influence these aspects of his or her health. Therefore, a measure was developed for each health dimension of the extent to which the employee believed that he or she had control over their health.

Employees were asked to rate the control they had over each of the health factors individually. The item stem read, "How possible do you feel it is to change your health level on each of the following health dimensions within the next year?" Following the stem each of the eight health dimensions from the health assessment were listed. For each health factor respondents were asked to rate the extent to which they believed they could change their behavior on that dimension on a five-point Likert-type scale of "None" to "Extremely Possible". (See Appendix J for a complete listing of items.) The estimate of internal consistency reliability yielded an alpha of .89 over the entire sample from both hospitals.

Commitment. Employee commitment to change health behaviors was measured in two ways: actual behaviors that implied an interest in changing behavior and employees' self-reports of their willingness to change their behaviors. However, actual behaviors were available only from the hospital using incentive systems. Therefore, the "objective" behaviors were used to only draw inferences about the validity of the self-report measures.

Data were collected on the survey to measure employee willingness to change their behaviors. Eight items relating to each of the eight health dimensions were developed for this study to assess employee willingness to change. The item stem read, "How willing are you to work on improving or maintaining this aspect of your health to a healthy level?" Below the stem were listed each of the eight health dimensions. For each health factor respondents were asked to rate the extent to which they believed they were willing to improve or maintain their behavior on that dimension on a five-point Likert-type scale of "Not at all" to "Extremely Willing". (Refer to Appendix K for a complete listing of the items.) The eight items were combined for an overall indicator of commitment. The internal consistency reliability of the combined scale of these items was .90 for the entire sample.

Beyond survey responses, data were collected from employee records in the hospital utilizing an incentive-based system to provide objective data of employee health, which was collected during the annual health assessment. Records detailing employee health levels were available for the two years prior to the survey collection date. Other data, which might indicate commitment, were also available in employee records. For instance, the organization offered decreased costs of membership to local health clubs,

fitness equipment, and weight loss programs. In addition, the organization had a specific department that promoted health-related programs within the hospital. Examples of these programs were weight loss, exercise, and smoking cessation. Each instance of participation in these organizationally sponsored events or discounts was documented in employee records. For our purposes, each instance of use was totaled for an overall indication of commitment. To evaluate the validity of the self-report items a correlation was calculated between the two types of measures. The correlation was significant (r=.18, p<.05), but fairly small. This is possibly due to the relatively few instances of participation in any of the recorded programs with the average number of programs attended being .23 with a standard deviation of .55. The low base rate could be due to involvement in fitness and health programs outside the organization or in programs not documented by the organization. Thus, the objective data from the hospital with the incentive plan provided some support for the validity of the self-report measures of health-related activities, but convergent validity was low. No further analyses will be conducted utilizing the objective commitment data due to the low base rate of participation creating severe range restriction.

Perceived Accuracy of Measurement. Within the incentive sample, employees' perceptions of the accuracy of the measures used to establish their Health Quotients were assessed. Eight items assessed employee perceptions of the accuracy of measurement techniques used by the organization to determine their health level on each of eight dimensions. An example item is, "The blood test to measure Cholesterol for the Health Index is accurate". (Refer to Appendix L for a complete listing of the items.) These statements were repeated for each of the eight health dimensions with the appropriate

health factors and measurement techniques substituted. Participants responded to the item using a 5-point Likert-type scale from "Strongly Agree" to "Strongly Disagree". The eight items were averaged for an overall measure. The internal consistency reliability for the overall accuracy measure was alpha = .82.

Demographics. Age, gender, race, education, and job level data were available through employee records (in the hospital using the incentive-based program) and through items on the survey. In addition, an item measured annual household income with six response ranges available to choose from anchored at "Below $14,999" to "$85,000 or Above".

Chapter 4

RESULTS

Nature and Quality of Variables

The method section detailed the content and reliability estimates of the five measures: fairness perceptions, health behaviors, perceived control, commitment, and measurement accuracy. An overview of these results are provided in Table 5. In this table, estimates of internal consistency reliability for each of the variables are provided for the entire sample, the incentive sample, and the traditional sample. Reliability estimates for the subsamples were provided as some of the hypotheses were proposed for only one of the samples. In the following paragraphs, descriptive information for the variables will be provided.

Table 5.

Reliability Data for Constructed Scales.

Scale & Group	Mean	N	SD	# of Items	Alpha
Distributive Justice					
Overall	3.38	506	1.02	8	.88
Incentive	3.08	232	.87	8	.86
Traditional	3.70	270	1.07	8	.88
Procedural Justice					
Overall	3.68	504	.95	7	.92
Incentive	3.32	230	.67	7	.84
Traditional	3.99	270	1.03	7	.93
Perceived Control					
Overall	3.61	507	.89		
Incentive	3.63	237	.89	8	.86
Traditional	3.60	267	.89	8	.86
Commitment					
Overall	3.67	506	.89		
Incentive	3.74	236	.91	8	.88
Traditional	3.60	267	.86	8	.86
Accuracy					
Incentive	2.95	237	.80	8	.81
Health Behaviors					
Overall	3.54	514	.32	66	.93
Incentive	3.45	243	.27	66	
Traditional	3.61	271	.33	66	

First of all, out of the twenty-five items measuring fairness, two factors were found using 15 items in the pool. These fifteen items were broken into two fairness measures, procedural and distributive justice. The mean response on the distributive justice scale (8 items) for each of the three groups are as follows: entire sample, x=3.38, sd=1.02; incentive group, x=3.08, sd=.87; and the traditional group, x=3.70, sd=1.07. The mean response on the procedural justice scale for each of the three groups are as follows: entire sample, x =3.68, sd=.95; incentive group, x=3.32, sd=.67; and the traditional group, x=3.99, sd=1.03. The mean responses on both scales were higher in the traditional group.

The second variable was assessed with a composite of eight items measuring employee perceptions of control over their health. The mean response on a five-point scale for the entire sample was 3.61 with a standard deviation of .89, for the incentive group the mean was 3.63 with a standard deviation of .89, and for the traditional group, the mean was 3.60 with a standard deviation of .89. Mean perceptions of control were similar in all three groups.

Third, eight items assessed employee commitment to maintaining or improving health-related behaviors. These items were averaged for a composite indicator of commitment. The mean commitment scale response was 3.67 with a standard deviation of .89 for the entire sample, the mean was 3.74 with a standard deviation of .91 for the incentive group, and the traditional group, on average, responded 3.60 with a standard deviation of .86. The incentive group had a slightly higher mean commitment response in comparison to the traditional group.

The fourth variable was assessed with a composite of eight items measuring employee beliefs about the accuracy of the measures used to assess their health levels on the eight dimensions. These data were collected only in the incentive group. The mean response of the incentive group on this scale was 2.95 on a five-point scale with a standard deviation of .80.

Finally, sixty-six items were combined into one overall measure of health behaviors. The mean responses on the health behaviors scale was 3.54 with a standard deviation of .32 for the entire sample, for the incentive group the mean was 3.45 with a standard deviation of .27, and for the traditional group the mean was 3.61 with a standard deviation of .33. The traditional group reported, on average, more positive health-related behaviors with a greater standard deviation.

Relationships Among Variables.

In this section, three tables detailing the relationships between the variables discussed above and various other demographic indices will be provided. The first table (Table 6) provides intercorrelations among the benefits system type or hospital, perceived control, fairness perceptions, commitment, health-related behaviors, and accuracy perceptions. Within this table data are provided from the entire sample (N=516), the incentive hospital (N=243), and the traditional benefits hospital (N=273) individually. The second table (Table 7) contains an intercorrelation matrix for the incentive group only and includes additional demographic information and both objective commitment and health-behavior data in addition to the key variables of interest in the study. The final table (Table 8) provides an intercorrelation matrix for the traditional benefits hospital only and includes relevant demographic variables in addition to the key variables

of interest. The data provided in these tables will be utilized to evaluate the majority of the hypotheses proposed in the following section.

Table 6.

Means, Standard Deviations, and Intercorrelations for Entire Data Set

Variable	N	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12
Entire Sample															
1. Benefits System	516	1.53	.50	--											
2. Control	507	3.61	.89	-.03	.89										
3. Dist.	506	3.38	1.02	.28**	.08	.88									
Justice															
4. Proc. Justice	504	3.68	.95	.35**	.09*	.71**	.92								
5. Commit	506	3.67	.89	-.08	.64**	.03	.09*	.90							
6. Health Behs.	514	3.54	.32	.26**	.15**	.07	.14**	.15**	.93						
Incentive Hospital															
7. Control	237	3.63	.89							.86					
8. Dist.	232	3.08	.87							.20**	.86				
Justice															
9. Proc. Justice	230	3.32	.67							.17*	.56**	.84			
10. Commit	236	3.74	.91							.58**	.18**	.20**	.88		
11. Accuracy	237	2.95	.80							.13*	.38**	.32**	.11	.81	
12. Health Behs.	243	3.45	.27							-.05	.05	-.07	.20**	.09	.80

Table 6 (cont'd).

Variable	N	Mean	SD	13	14	15	16	17
Incentive Hospital								
7. Control	237	3.63	.89					
8. Dist. Justice	232	3.08	.87					
9. Proc. Justice	230	3.32	.67					
10. Commitment	236	3.74	.91					
11. Accuracy	237	2.95	.80					
12. Health Behs.	243	3.45	.27					
Traditional Hospital								
13. Control	267	3.60	.89	.86				
14. Dist. Justice	270	3.66	1.07	.01	.88			
15. Proc. Justice	270	3.99	1.03	.07	.74**	.93		
16. Commitment	267	3.60	.86	.70**	-.05	.08	.86	
17. Health Behs.	271	3.61	.33	.03	-.03	.12*	.16*	.86

Table 7.

Intercorrelations between Variables in Incentive Group

Variable	N	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Gender	242	1.75	.44	1.00												
2. Age	242	39.76	9.49	-.17**	1.00											
3. Race	242	1.07	.36	-.07	.01	1.00										
4. Job Type	241	3.58	1.61	-.01	-.03	.12	1.00									
5. Income	236	3.87	1.30	-.24**	.18**	-.11	-.47**	1.00								
6. Education	241	4.66	1.18	-.03	-.00	-.20**	-.52**	.44**	1.00							
7. Perceived Control	237	3.63	.89	-.02	-.08	.06	.11	-.08	-.11	1.00						
8. Dist. Justice	232	3.08	.87	-.09	-.02	-.01	-.24**	.27**	.20**	.20**	1.00					
9. Proc. Justice	230	3.32	.67	-.12	.08	.13	-.04	.10	-.00	.17**	.58**	1.00				
10. Commit	236	3.74	.91	-.01	.07	.09	.10	-.03	-.05	.58**	.18**	.20**	1.00			
11. Accuracy	237	2.95	.80	-.13	.01	.06	-.08	-.01	.10	.13**	.38**	.32**	..02	1.00		
12. Health Beh.	243	3.45	.27	.03	-.02	-.03	-.02	.16*	.02	-.05	.05	-.07	.06	.09	1.00	
13. Health Quotient	237	.88	9.18	-.05	-.25**	-.04	-.12	.16*	.20**	-.02	.33**	.13	-.11	.13*	.12	1.00

Table 8.

Intercorrelations between Variables in Traditional Group

Variable	N	Mean	SD	1	2	3	4	5	6	7	8	9	10
1. Gender	270	1.86	.35	1.00									
2. Age	273	41.3	13.06	-.02	1.00								
3. Race	269	1.10	.57	-.17**	-.03	1.00							
4. Job	271	2.9	1.40	.01	.03	.02	1.00						
5. Educ.	270	4.71	1.07	-.02	-.02	-.08	-.47**	1.00					
6. Perc. Control	267	3.58	.89	-.12	-.03	.05	-.12*	.06	1.00				
7. Dist. Justice	270	3.66	1.07	.10	.32**	.11	.02	-.07	.01	1.00			
8. Proc. Justice	270	3.99	1.03	.08	.33**	.10	-.14*	.02	.07	.74**	1.00		
9. Commit.	267	3.60	.86	-.01	.03	.06	-.04	.07	.70**	-.05	.08	1.00	
10. H. B.	271	3.61	.33	.17**	.19**	-.13*	-.05	-.02	.03	-.03	-.03	.16*	1.00

Tests of Hypotheses

In the following section each hypothesis will be restated, the analyses conducted to test each hypothesis discussed and any related findings provided. Each hypothesis will be discussed in turn and further explanations of the findings can be found in the discussion section.

Hypothesis 1. First, it was hypothesized that employees' perceptions of the fairness of their benefits system would be positively affected by the values of their individual outcomes. This hypothesis referred to reactions of employees working under the incentive conditions as the receipt of some tangible outcome is required; it was explored only within the incentive hospital (N=243). Correlations were computed between both distributive and procedural fairness perceptions and the health-related outcome (the Health Quotient Score). The hypothesis that distributive justice perceptions would be positively related to health-related outcomes was supported (r=.33, p<.01). However, the hypothesis relating procedural justice perceptions to health outcomes was not supported (r=.13, p>.05). Refer to Table 7 for mean, SD, and intercorrelation data.

Hypothesis 2. Hypothesis two proposed that perceptions of control would mediate the relationship between age and fairness perceptions such that older employees would believe that they had less control over their health levels than younger employees and would subsequently perceive their benefits programs as less fair. To test this hypothesis we first selected the incentive sample (N=243), and computed correlations between age and control (r=-.08, p>.05), distributive justice (r=-.02, p>.05), and procedural justice (r=.08, p>.05) individually. No correlation was significant and thus

further analyses investigating this mediation hypothesis were not conducted in the incentive sample. Refer to Table 7.

Next, we ran the same analyses in the traditional sample (N=273). We computed correlations between age and control (r=-.03, p>.05), distributive justice (r=.32, p<.01) and procedural justice (r=.33, p<.01). Refer to Table 8. These data do not suggest the support of the mediation hypothesis, but do support a direct positive relationship between age and fairness in the traditional sample.

Hypothesis 3. The third hypothesis proposed that employee income level would moderate the relationship between health-related outcomes and employee perceptions of the fairness of their benefits system for employees within the incentive-based system. The relationship between outcomes and perceived fairness was expected to be stronger for those with lower incomes. To examine this hypothesis, only the incentive sample was used as monetary outcome was a critical variable in the hypothesis and was only employed in the incentive group.

Hierarchical regression analyses were used to test the moderated hypothesis. In the first step income and health-related outcome (HQ) were individually entered into the regression equation and significantly predicted distributive justice perceptions (R^2 change=.140, p<.01). Then, the interaction term was entered and did not lead to a significant increase in the R^2 (R^2 change=.002, p>.05). Individuals who receive negative outcomes perceive the incentive-based system as less distributively fair than those receiving higher outcomes regardless of their incomes.

Hierarchical regression analyses were also used to test this moderated hypothesis involving procedural justice perceptions, our second aspect of fairness. In the first step,

income and health-related outcome (HQ) were individually entered into the regression equation and did not significantly predict procedural justice perceptions (R^2 change=.020, p>.05). The interaction term was then added into the regression equation and was also a non-significant predictor (R^2 change=.003, p>.05). Outcomes (HQ) nor income levels proved important in procedural justice perceptions for the incentive group.

Hypothesis 4. In the fourth hypothesis, employees within the incentive-based benefits system, who believed that the measures used to determine their health levels were more accurate, were expected to report higher perceptions of the fairness of the health benefits system than those who believed the measurements were less accurate. To test this hypothesis, employees within the incentive group were selected (N=243) because accuracy data were only available for that sample. Correlations between perceptions of the accuracy of the health benefits system and both procedural and distributive justice perceptions were computed. Employee perceptions of the accuracy of the measures used to determine their health levels significantly correlated with their perceptions of both the distributive fairness (r=.38, p<.01) and procedural fairness (r=.32, p<.01) of the incentive-based benefits system. Refer to Tables 6 or 7.

Hypothesis 5. The fifth hypothesis proposed that employees who were more committed to maintaining or improving their health would report performing more healthy behaviors than those less committed. This hypothesis was tested with a correlation between commitment and self-report health behaviors for the both samples combined (N=516). The hypothesis was supported (r=.15, p<.01), suggesting that employees, in these samples, who report being more committed to improving or maintaining their health levels do report performing more healthy behaviors. Refer to

Table 6. We can also correlate the health quotients of employees within the incentive system and their self-reports of commitment ($r=.06$, $p<.05$) which again suggests no support for this hypothesis. Refer to Table 7.

Hypothesis 6. The sixth hypothesis proposed that employees who reported more positive perceptions of fairness would report higher levels of commitment to maintain or improve their health-related behaviors than those who have lower perceptions of fairness. The hypothesis was tested on the entire sample (N=516) through correlations between distributive ($r=.07$, $p>.05$) and procedural justice ($r=.14$, $p<.01$) perceptions and self-reported commitment. The data suggest that employees who believe the health benefits system to be more procedurally fair report higher levels of commitment to improve or maintain their health-related behaviors while there is no significant relationship between commitment and distributive justice. Refer to Table 6.

Hypothesis 7. Hypothesis seven proposed that employees who perceived that they had more control over their health-related outcomes would report higher commitment to maintain or improve their health-related behaviors than those who perceived less control. Again, this hypothesis was tested on the entire sample (N=516) through a correlation between perceived control and self-report commitment. The data show that employees who perceived higher levels of control over their health also reported higher levels of commitment to improve or maintain their health-related behaviors ($r=.64$, $p<.01$). Refer to Table 6.

Hypothesis 8. The eighth hypothesis suggested that employees who perceived that they had more control over their health-related outcomes would report more favorable perceptions of the fairness of their benefits system than those who perceived

less control. Correlations between distributive and procedural justice perceptions and self-reports of perceived control were conducted for the entire sample (N=516). The results suggest that individuals perceptions of distributive justice and control are not related (r=.08, p>.05). However, the results do suggest that individuals within these samples who believe that their benefits system is procedurally fair do report stronger beliefs in their ability to control their health levels (r=.09, p<.05). Refer to Table 6.

Hypothesis 9. The ninth hypothesis stated that employees within an incentive-based benefits system would report performing more healthy behaviors than those under a standard health benefits system. This hypothesis was tested using a directional t-test to investigate mean differences between the two groups. With equal variances assumed, the t-test was significant (t=-6.02, 512 df, p<.01), but in the wrong direction. Employees employed under the traditional benefits system reported more healthy behaviors than those under the incentive-based system (Refer to Table 9). Possible explanations of this finding are addressed in the discussion section.

Table 9.

Data Illustrating the Differences between Means of the Incentive-based and Traditional Samples: Independent Samples and t-test for Equality of Means

Variables	t	df	Sig. (2-tailed)	Sig (1-tailed)	Difference
Distributive Justice	-6.58	500	.000	.000	-.58
Procedural Justice	-8.45	498	.000	.000	-.67
Commit.	1.73	501	.084	.042	.14
Perceived Control	.60	502	.550	. 275	.00
Self-Report Health Behaviors	-6.02	512	.000	.000	-.16
Income	-1.06	502	.289	.144	-.12
Gender-	3.10	510	.002	.001	-.11
Race	-.62	509	.538	.269	.00
Education	-.44	509	.662	.331	.00
Age	-1.51	513	.133	.067	-1.53
Job Type	5.08	510	.000	.000	.68

Hypothesis 10. Hypothesis ten proposed that employees within an incentive-based benefits system would report higher levels of commitment to maintain or improve health-related behaviors than those under a traditional benefits system. This hypothesis was tested with a directional t-test conducted on the differences between mean self-report commitment levels between the two samples (incentive N=243; traditional N=273). The hypothesis was supported ($t=1.73$, 501 df, $p<.05$). The incentive group reported higher commitment to maintaining or improving their health-related behaviors than those within the traditional group. Refer to Table 9.

Hypothesis 11. The eleventh hypothesis proposed that employees under an incentive-based benefits system would report more perceived control over their health-related outcomes than those under a standard health benefits system. This hypothesis was tested with a directional t-test conducted on the differences between mean perceived control between the two samples (incentive N=243; traditional N=273). This hypothesis was not supported ($t=.60$, 502 df, $p>.05$). Refer to Table 9.

Hypothesis 12: The last hypothesis proposed that employees within the two different hospitals would report, on average, significantly different mean fairness perceptions, however directionality was not hypothesized. It was theoretically feasible to propose that employees under the incentive-based system would report both higher and lower perceptions of the fairness of their benefits system than those who were covered under the traditional program. These two models are represented in Figures 2 and 3.

To test this hypothesis and establish the directionality of the relationship, two independent samples t-tests were conducted. These data are provided in Table 9. The results suggest that there are significant differences between both mean distributive

justice perceptions (t=-6.58, df=500, p<.01) and procedural justice (t=-8.45, df=498, p<.01) perceptions between the two benefits programs. In addition to these analyses, correlations between fairness perceptions and benefits system type were calculated. Both correlations were significant (distributive justice r=-.28, p<.01; procedural justice r=-.35, p<.01) and suggested that employees within the incentive-based benefits program reported lower perceptions of fairness than those within the traditional benefits program supporting the model depicted in Figure 3.

Chapter 5

DISCUSSION

The main purpose of this study was to investigate the interrelationships among employee perceptions of control, fairness perceptions, and commitment as they relate to health behaviors under conditions where monetary incentives for health behaviors do or do not exist. These questions were addressed through the examination of two differing benefits systems, one offering an incentive health benefits program and the other utilizing a more traditional health benefits approach. Many of the proposed hypotheses were significant and suggest, overall, that both perceptions of control and fairness influence employees reports of commitment to their overall health regardless of the type of benefits system. The conclusion of this paper reviews and discusses our findings, addresses some limitations present in the study itself, and, in light of these findings and limitations, suggests some implications and overall conclusions.

Overview of Results

When first presented, the hypotheses were discussed in three different sections. The first included hypotheses directed at understanding the effects of four general variables on fairness perceptions: distributive and procedural justice. The second set included hypotheses that were directed at creating a framework for understanding the interrelationships between fairness, perceived control, and commitment as they are critical in understanding behavioral change. The final set of hypotheses involved the consideration of the effects of the different health benefits systems on the proposed relationships between fairness, perceived control, commitment, and health-related

behaviors. These three sections will again be used as a framework for discussing the overall findings of this study.

The Effects of Outcome, Age, Income, and Perceived Accuracy on Fairness Perceptions. Four hypotheses individually investigated the effects of outcome, age, income, and accuracy perceptions on employee fairness perceptions with mixed results. The first hypothesis posited that employees' perceptions of the fairness of their benefits system would be positively related to the values of their individual outcomes. This hypothesis was based on work by Greenberg (1987, 1994) and others who found that individual's fairness perceptions are affected by self-serving biases. This work would suggest that individuals perceive as most fair those outcomes that benefit themselves the most. As hypothesized, individuals within the incentive hospital receiving more positive outcomes did perceive their benefits system as more distributively fair ($r=.33$; $p<.01$). However, the relationship between procedural justice and outcome value was not significant ($r=.13$, $p>.05$). These findings suggest that within the incentive group, employee perceptions of the distributive justice of their outcomes increases with the favorability of the outcome. Employees who are receiving the more positive outcomes perceive the benefits system as more distributively fair. Procedural justice perceptions, however, are unaffected by outcome value.

The second hypothesis proposed that perceptions of control would mediate the relationship between age and fairness perceptions. The proposed relationship between age and perceptions of control was supported by work in the health psychology domain where research suggests that older people are often less convinced of their ability to change their overall health (Baum et al., 1997; Taylor, 1995). With this in mind, we

turned to expectancy theory (Vroom, 1964) and proposed that employees who don't perceive that their actions will affect their outcomes won't change their health-related behaviors.The mediation hypothesis was not supported. Within the incentive sample, the correlations between age and control (r=-.08; p>.05), age and distributive fairness (r=-.02; p>.05), nor age and procedural justice (r=.08; p>.05) were significant so any further investigations into the mediation hypothesis were not conducted. Within the traditional sample, however, the data were slightly more interesting. The same correlations were calculated with age and control not significant (r=-.03, p>.05) and both fairness correlations with age significant (distributive r=.32, p<.01; procedural r=.33, p<.01).

These data are quite interesting. While neither sample provided support for the mediation hypothesis, the results between the two samples are very different. Within the incentive sample, fairness perceptions and age were unrelated. However, within the traditional sample, the data illustrate that as employees get older, they perceive the benefits system as more distributively and procedurally fair. This difference could be due to the nature of the benefits programs under investigation. Perhaps in the incentive sample employees do not have to be old to perceive the program as unfair, perhaps you just have to be unhealthy. This explanation is partly addressed in the first hypothesis were a significant correlation was found between health-related outcome and fairness perceptions for the incentive group. However, further investigation into this hypothesis by including the traditional group cannot be performed due to the lack of objective ratings of healthiness in that sample.

The third hypothesis proposed that employee income level would moderate the relationship between health-related outcomes and employees' perceptions of the fairness

of their benefits system such that positive correlations between health-related outcomes and both distributive and procedural fairness perceptions would be stronger within lower income groups than within higher income groups. This hypothesis was based on the fact that the impact of a financial amount of money added or subtracted per pay period would be greater for those with lower incomes than those with higher ones. Research within health psychology supports this position. Individuals from lower socioeconomic groups are, on average, less healthy than those in higher socioeconomic groups in the general population (NHLBI, 1994) and in our sample (correlation between income and HQ is equal to .16, $p<.05$). With this in mind, one of the fairness guidelines proposed by Leventhal (1976) which suggests that fair procedures should be perceived as free from bias may be violated. If larger portions of lower socioeconomic groups are receiving disincentives or pay deductions the incentive-based program may be viewed as unfair.

This hypothesis also was not supported. The lack of direct support for the moderation hypothesis could stem from the fact that both our incentive and traditional samples were composed of a higher percentage of upper level employees who were likely to be earning higher incomes. However, within the incentive group, income was positively correlated with both distributive ($r=.27$, $p<.01$) and procedural fairness ($r=.20$, $p<.01$) perceptions as expected.

The final hypothesis in this section addressed the relationship between perceptions of accuracy and fairness. Specifically, it was hypothesized that employees within the incentive-based benefits system who believed that the measures used to determine their health levels were more accurate were expected to report higher perceptions of the fairness of the health benefits system than those who believed the

measurements less accurate. This hypothesis was based on the foundations for fair procedures as laid out by Leventhal (1976). According to his work and supported by empirical findings (e.g., Sheppard & Lewicki, 1987), an individual must perceive that resource distributions are based on accurate information if they are to be considered fair. In our study, we hypothesized that individuals may differ in their beliefs in the accuracy of the measures used to assess their health levels and that any perceptions of inaccurate assessment would lower perceptions of the distributive and procedural fairness of the incentive system.

Results supported the hypothesis and suggested that employees within the incentive system who perceived the measurement methods utilized to determine their overall health as more accurate also perceived their benefits system as more distributively (r=.38, p<.01) and procedurally (r=.32, p<.01) fair. In general, these data suggest that employees who perceive that the system employed to determine the allocation of health benefits costs is accurate are more likely to perceive that same system as fair. Expanding beyond the scope of this study, this finding supports research in support of Leventhal's (1976) guidelines indicating that the accuracy of methods used to determine the distributions of resources is critical in determining perceptions of fairness.

Hypotheses Relating to the Relationships between Fairness, Commitment, and Perceived Control. There are four hypotheses relating to the relationships between fairness perceptions, commitment, and perceived control. These four hypotheses set up a framework to investigate our main interest in this study, the interrelationships among fairness, control, and commitment in predicting behavioral change. All four hypotheses

were supported, providing support for the framework we laid for the relationship between fairness, control, and commitment.

The first hypothesis in this set is actually the fifth we proposed. In the fifth hypothesis, employees who were more committed to maintaining or improving their health were expected to report more healthy behaviors than those less committed. The foundation for this hypothesis originates in two prominent research fields. First, goal commitment research suggests all employees are not equally committed to goals and that commitment levels do influence employee behaviors (Hollenbeck & Klein, 1987; Locke, 1968). In addition, theories by Janz & Becker (HBM, 1984) and Ajzen & Fishbein (TRA, 1980) both attempt to understand when and why people behave and propose commitment as a direct antecedent to behavior. In our study, this hypothesis was supported with a significant correlation in the expected direction ($r=.15$, $p<.01$). These data suggest that employees who report higher commitment levels to health improvement or maintenance will also report healthier behaviors.

The sixth hypothesis and the second in this set proposed that employees who reported more positive perceptions of fairness would also report higher levels of commitment to maintain or improve their health-related behaviors. Equity theory (Adams, 1965) provides support for this hypothesis. According to equity theory employees who believe that with the input of certain behaviors certain predetermined outcomes will be received are more likely to perform the required input behaviors, provided the outcome is meaningful to the individual. For our study, employees who believed that they could improve their health by exhibiting certain healthier behaviors and receive a monetary outcome were expected to be more likely to report commitment

to maintain or improve their health. The results for this hypothesis were noteworthy.

The hypothesis was supported with a significant correlation between procedural fairness perceptions and self-reports of commitment (r=.14, p<.01) in the expected direction, but unsupported by a non-significant correlation between distributive justice and commitment self-reports (r=.07, p>.05). Employees who perceive that their benefits program is procedurally just are more likely to report being committed to improving or maintaining their health-related behaviors than those who perceive their benefits program as less procedurally fair.

The third part of the framework we are proposing is detailed in the seventh hypothesis. Specifically, we believed that employees who perceived that they had more control over their health-related outcomes would report higher commitment to maintain or improve their health-related behaviors than those who perceived less control. Both fairness and motivation domains provide strong support for this hypothesis. First of all, research suggests that strong commitment should be present when employees believe they have control over their outcomes (Lind & Tyler, 1988). Also, support exists in equity theory (Adams, 1965) and expectancy theory (Vroom, 1964) which both suggest that employees who perceive control over their outcomes are more motivated to attain those outcomes and devote more of their efforts to attainment. In addition, the Health Belief Mode theory (Janz & Becker, 1984) describes four antecedents to commitment to change health behaviors. One of those antecedents is perceived control. The hypothesized relationship between perceptions of control and commitment was significant and in the predicted direction (r=.64, p<.01).

The final part of the framework is described in the eighth hypothesis which proposed that employees who perceived that they had more control over their health-related outcomes would report more favorable perceptions of the fairness of their benefits system than those who perceived less control. Support for this relationship exists in equity theory (Adams, 1965) and procedural justice (Greenberg, 1987) which both suggest that perceptions of equity or fairness occur when an outcome is considered, in part, under the control of the individual. Our data provide mixed support for this finding with a significant correlation in the predicted direction between control and procedural justice (r=.09, p<.05) suggesting that employees who believe that they have control over their outcomes are more likely to perceive the process that determines those outcomes as fair and a non-significant correlation between distributive justice and control (r=.08, p>.05).

Putting the Pieces Together: Understanding How Incentive Systems Affect the Relationships between Fairness, Perceived Control, and Commitment. The remaining five hypotheses were directed at understanding how the incentive-based health benefits system would affect the framework specified in the previous set of hypotheses concerning the relationships between fairness, perceived control, and commitment. Two of our four hypotheses were unsupported.

The first hypothesis within this set is actually the ninth hypothesis that was proposed. Specifically, we proposed that employees within the incentive-based benefits system would report performing more healthy behaviors than those under a standard health benefits system. The rationale behind this hypothesis is fairly intuitive on the surface, we assumed that the incentive-based system is working and that employees

under that system would report performing more healthy behaviors. Research also supports this hypothesis in such classic theories as Skinner's (1969) reinforcement theory or Vroom's (1964) expectancy theory. Surprisingly, this hypothesis was not supported. In fact, the directional t-test conducted to investigate any mean differences between groups was significant (t=-16.28, 469 df, p<.01), but in the opposite direction. These data imply that employees within the traditional benefits system actually report performing more healthy behaviors than those under the incentive system.

There are several plausible explanations for this phenomenon. One obvious way to interpret this finding is to conclude the self-report measures accurately reflect the levels of health, and it was higher under standard conditions. Yet, this alternative is extremely unlikely. To reach this conclusion one must assume that (a) the incentive system lowered health, (b) the standard system raised the health level, (c) there were differences in levels of health between the two, or (d) the perceptions of actual individual health level were lower (or more realistic) under the incentive system. Several factors point to the last as the most likely conclusion.

First, explanations "a" and "b" are unlikely because there is nothing we know about either system that would predict this pattern of results. The incentive system, for example, had added classes on nutrition, smoking cessation, and other health-related programs. There is no evidence that such activities decrease overall health. Likewise, while the control hospital had some programs to encourage health they had no more than the incentive one.

With respect to the third explanation, we did measure a number of demographic variables and none of the comparisons between hospitals was consistent with an

interpretation that the traditional hospital would have higher reports of health. In addition, as we discussed earlier, our two samples were very similar. Specifically, all of our subjects come from the same type of organization, a hospital. Also, the two hospitals are located in the same city and are likely drawing from the same applicant pool. Finally, our two samples had reasonably similar demographics. These similarities provide us no reason to suspect that the two samples would have different health levels or health-related behaviors.

Finally, we have to consider the fourth alternative as an explanation of why the traditional hospital reported more positive health-related behaviors than the incentive group. There are at least three reasons perceptions of health may have been lower under the incentive system. First of all, employees in the incentive hospital were lead to be more critical when assessing their own health levels due to the nature of the program. As the incentive or disincentive amounts were determined by an annual health assessment, employees were lead to realistically view their health-related behaviors since they were tied to an outcome and would, in part, determine their incentive levels the coming year. Secondly, and related to the first, employees under the incentive system had more accurate indicators of their health levels due to the annual health assessments which were probably much lower than what would normally be assumed. Finally, the employees at the incentive hospital knew that we had access to their health records from the organization thus creating increased pressure to report realistic and accurate levels of health and health-related behaviors.

For these reasons, we believe that the incentive-based benefits program may have altered employees' perceptions of their health and health-related behaviors, not health

levels themselves. Specifically, we are suggesting Beta change, or differences in the way the two groups view the scaling of health-related behaviors. Unfortunately, we cannot investigate the presence of Beta change because we cannot address issues of possible confounds. For instance, we believe that issues such as incentive employees' perceptions of the accuracy of the subjective health data could also influence health behavior ratings in our surveys. This would not indicate Beta change and we would have to control for accuracy perceptions in both groups before Beta change analyses were conducted as the effects of accuracy and Beta change would look identical in any analyses. However, we cannot control for accuracy perceptions in both the incentive and traditional samples as we do not have these measures for the second group.

Overall, we do believe that, for various reasons, this data addressing this hypothesis do not necessarily suggest that the employees within the incentive system were less healthy, just that they viewed health in a different, perhaps more accurate, fashion than the traditional group. In conclusion, it is important to note that while we are suggesting that the groups were not reporting health-behaviors in the same fashion, the distribution of people's self-reports of health-related behaviors should not be affected by the mean shift in health-related behaviors between the two groups. The next hypothesis in this section and the tenth proposed in the study further examines this phenomenon by examining the relationship between employee commitment and benefits system type.

The tenth hypothesis in this study forms the second hypothesis in this section investigating the role of benefits system type on the fairness, control, and commitment relationship. Hypothesis ten proposed that employees within the incentive-based benefits system would report higher levels of commitment to maintain or improve health-related

behaviors. The Theory of Reasoned Action by Ajzen & Fishbein (1980) suggests that there are two antecedents to commitment to change behaviors, the influence of individual beliefs in favor of the new behavior and the influence of social norms that favor the new behavior. We believed that both of these would be stronger in the incentive group due to the increased health education efforts employed by the benefits department.

The hypothesis was supported when examined with a directional t-test ($t=1.73$, 501 df, $p<.05$). The two groups did differ in their self-reported commitment levels and in the predicted direction. This finding provides further reason to interpret the findings of hypothesis 9 cautiously. While the analyses from hypothesis 9 suggested that employees within the traditional benefits system were performing more healthy behaviors, findings concerning hypothesis 10 suggest that employees within the traditional benefits system are less committed to improving or maintaining their health levels. Perhaps, as we proposed earlier, employees within the incentive system are more committed to improving their health, but just have more accurate perceptions of how far they have to go to do that.

The eleventh hypothesis, the third in this section, continues to progress through the framework. Specifically, we hypothesized that employees within the incentive-based health benefits system would report more perceived control over their health-related outcomes than those in the more traditional benefits system. This hypothesis stemmed from the design of the incentive-based program which placed a good deal of importance on establishing easily accessible health-related classes, facilities, and information.

This hypothesis was not supported ($t=.598$, 502 df, $p>.05$). There was no significant difference between the perceptions of control over health-related outcomes in

the two groups; the incentive system did not affect individuals' beliefs in their ability to change their health levels. We believe that the lack of support for this hypothesis is due to the length of time the incentive system had been in place. As we discussed in the method section, the incentive system had been in effect for almost two years prior to our survey and it is possible that any initial increase in employees' beliefs that they could change their health due to the program was probably greatly reduced as employees began to see that changing their health levels was not as easy as it first seemed.

Up to this point, we have discussed three of the four variables that were incorporated into our framework for understanding employee willingness to change behaviors. The previous three hypotheses were directed at the potential effects an incentive system could have had on employee health behaviors, commitment, and perceived control with mixed support for our hypotheses. The remaining aspect of the framework is employee perceptions of fairness. This aspect of the framework was the most problematic from a theoretical and practical point of view. Primarily, we were not sure who would perceive their benefits system as more fair. Thus, we proposed to do an exploratory analysis of the differential effects of the benefits system type on fairness perceptions. We proposed that employees within the incentive-based benefits system would perceive their benefits as more or less fair than those within the traditional benefits system. Consideration of the design of the incentive program and prior research led us to believe that either could be the case. The data suggest that employees within the incentive-based benefits system did perceive their benefits as less fair. To establish that there was a significant difference between the mean perceptions of fairness between the two groups we conducted an independent samples t-test. The t-test proved significant

suggesting that our two samples did differ on their mean fairness perceptions (distributive t=-6.45, df=500, p<.01; procedural t=-8.45, df=498, p<.01). In addition to the t-test, we conducted a correlation between benefits system type and distributive and procedural fairness perceptions, both correlations were significant (distributive r=.28, p<.01; procedural r=.35, p<.01). These data suggest that employees within the incentive-based benefits system perceived their benefits system as less fair than those within the traditional benefits system.

Overall, our investigation into the effects of the different benefits systems on our perceived control/fairness framework for predicting employee change behavior proved only marginally useful. Two hypotheses were supported. We found that employees within the incentive-based benefits system perceived their benefits system as less fair than employees under the more traditional benefits system and that employees under the incentive system reported higher commitment to maintaining or improving their health levels than those under the traditional system. One hypothesis was significant, but in the wrong direction such that employees within the traditional benefits system reported performing more healthy behaviors than those within the incentive-based benefits system. Finally, the hypothesized relationship between benefits system type and perceived control was not supported. These results imply that perceived control perceptions and commitment levels remain fairly unchanged under incentive-type programs, but that perceptions of fairness may be influenced.

In the following section, we will discuss several limitations that were present in the samples and the design of the study. Following that discussion, overall conclusions and implications will be drawn.

Limitations

Throughout the previous section dedicated to reviewing the results concerning the proposed hypotheses, three limitations proved important when considering the conclusions drawn from this study and will be discussed.

The first limitation is related to the nature of the sample. Throughout this paper, we have returned to the same issue underlying our data: are the samples representative of both hospitals? We have proposed and continue to argue that they are. To prove this point, we first argued that the demographic make-up of our incentive sample was representative of the entire hospital employing the incentive-based program. While we would have liked to have been able to say the same about the traditional sample, we did not have demographic information on the entire hospital. But, we did have the demographics on the incentive hospital and could assume that if the two samples were similar, the traditional hospital was probably adequately represented by the traditional sample due fact that both hospitals were located in the same city and selected employees from the same labor market. Thus, we compared the demographic make-up of our traditional sample to that of the incentive hospital and found that they were quite similar. We used this as support that the traditional sample represented the entire hospital.

The second limitation also concerns the nature of the samples. Specifically, it must be stated that these data are based on a quasi control group design (Cook & Campbell, 1990). In our study, these two hospitals were quite similar in a number of respects (i.e., location, demographics, salary ranges, and function), they were also quite dissimilar. For instance, the hospital sizes differed and the culture and climate of the two hospitals may have differed. Such designs and the issues we just presented allow for

other variable effects. While these possible effects have been considered, we realize that others may exist. We recognize this and stress that the reader should also.

A final limitation we will discuss concerns not the nature of the sample, but that of the data themselves. Specifically, the majority of our data were self-report, especially those data involved in any analyses involving both samples. To investigate the appropriateness of utilizing these self-report data, we found significant correlations between the overall measures of both subjective and objective health (r=.34; p<.05). This analysis is far from conclusive, it does, however, suggest some preliminary support for the validity of our self-report data. But, there are still implications that the use of self-report data could have had for our study.

First of all, we expected that responses on several of our variables (e.g., commitment, health-related behaviors, and perceived control) would be heavily slanted to the positive. We saw evidence that this was the case in our traditional group's mean health-related behavior responses. While we discussed why the self-report effects probably did not affect the incentive group's health behavior self-reports, we can fully expect that the group's reports of commitment and perceived control were influenced. This limitation could explain the lack of any differences between the mean levels of the two groups on perceived control and commitment.

Another limitation stems from the amount and nature of our items. Upon inspection of the items in the appendices it is clear that some of our items are quite repetitive, especially those measuring commitment and perceived control. It is very likely that response bias could have played a role in these measures with participants indicating the same or similar responses for all aspects of health. This could also explain

why we did not have mean differences between the groups on commitment nor perceived control.

In sum, the use of self-report items presents a severe limitation in these data and was probably the cause of the lack of support for the hypotheses presented concerning the effects of the benefits system. While we did have access to objective commitment and health behavior data in the incentive group, we did not have the same data in the traditional group and we did not have adequate commitment data due to an extremely low participation rate. In the future, studies should be directed at investigating these types of phenomenon with more objective measures of perceived control, commitment, and health-related behaviors.

Future Directions

In the search for ways to reduce health care costs, employers have turned to attempting to influence the behaviors of their employees in ways that lead to using less costly health care. By far the most frequently used method of control is to attempt to influence what health care services employees use. Yet, another method is to try to encourage healthy behavior in order to decrease the need for health care services. Such influence attempts are rare, but the present study looked at one of these, an incentive-based benefits system.

We argued a two-step model to explain employee perceptual and behavioral reactions to these types of systems. The first step proposed a model linking perceptions of control and fairness to commitment to improve or maintain health levels, and finally, to actual health behaviors. The second step incorporated the effects of the incentive system. More or less, our first step was supported while the second was not. There are several reasons for our failure to provide the second step.

The first reason for our failure could stem from the program itself. Perhaps the program didn't influence employee behaviors as expected or maybe the program had been in effect for too long prior to our involvement and attitudes and behaviors had returned to normal. Future research should investigate these types of incentive programs from the start and chart their progress and evolution to adequately explain and predict employee attitudinal and behavioral reactions.

The second reason also relates to the program itself. Specifically, the incentive program we investigated focused on influencing health-related behaviors, which are influenced by many other factors outside of work. For example, everyone has a vested

interest in health issues with even the "unhealthy" being concerned with their health levels. So, we investigated an incentive program that attempted to encourage behaviors that were, probably, already important to the employees. With this in mind, few individual health improvements or changes were probably possible with most people doing as much as they could to maintain or improve their health levels before the incentive-based program was introduced. This could explain why the second step was not successful. Both groups were probably performing the same health-related behaviors, both believing they could change their health the same amounts, and both committed similarly to maintaining or improving their health levels regardless of the type of health benefits system their organization employed. Future research should investigate incentive programs more closely tied to work-related behaviors that are not a central life issue and that can be modified with behavioral change.

Finally, and unrelated to the programs themselves, were the use of self-report measures. We discussed this issue in the limitation section, but the use of these types of measures could explain why our second step was not successful. Both groups were equally likely to self-report that they were committed to improving or maintaining their health and performing healthy behaviors. We had access to objective data in the incentive organization, but not in the traditional group thus analyses involving both groups and any objective data were impossible. To avoid this situation in future research, measures of objective health behaviors would be ideal.

Moving away from the topic of why the second step failed, there is another issue that our data could not address, but which should be addressed in any future research endeavors. Specifically, while we say that our model relating perceptions of control and

fairness to commitment and health-related behaviors was supported, our data cannot speak to the directionality of the relationships we hypothesized. It is plausible that the relationships move in the opposite directions from those we proposed. Specifically, the model we proposed could be reversed to propose that employees who are living healthy lifestyles are more likely to report being committed to maintaining those behaviors and thus perceive an incentive program focusing on the importance of good health as fair because they do have control over their health outcomes. All of the analyses reported would support this relationship, however it is unsupported in the literature. Future research should investigate the exact nature of the relationships.

Our overall conclusions concerning these data and limitations are that employees do base their commitment and subsequent health-related behaviors on perceptions of fairness and control and that these types of incentive-based benefits programs may have unintended effects on the fairness perceptions covered under these types of programs. Specifically, while perceptions of control remain unchanged between the two groups, commitment reports were positively affected and fairness perceptions were negatively affected by the incentive system.

APPENDICES

APPENDIX A

LETTERS SENT TO SAMPLE OF EMPLOYEES AT BOTH HOSPITALS

Employee name and address]

Dear [Employee name]:

The Cook Institute, a non-profit research unit located in Grand Rapids and Michigan State University are jointly sponsoring a research study designed to better understand people's health related behaviors. Their focus is on the role of the workplace in affecting the health of employees and their families. They are interested in reactions of employees to their medical benefits, the work climate as it relates to health, and the nature of their behaviors as they relate to health. We have agreed to be one of the work sites participating in this research because we are interested in many of the same things.

The study involves randomly drawing a sample of names from those persons currently employed at [hospital name]. You were one of those persons randomly selected. Although selected as part of the sample, the decision whether to participate is yours and yours alone. Participation is voluntary. In this same mailing, you will receive more information about the study from Professor Ilgen of Michigan State University that will help you to make this decision. We urge you to consider this carefully and hope that you will be willing to participate. We feel that the information that will be gained will be valuable to us at [hospital name] and to the wide audience of employers as the latter tries to meet the health needs of their employees.

More information and your copy of the survey is enclosed. Please read it carefully. If you should have any questions about your involvement in the study, please contact Deidre Wasson at [phone number].

Sincerely yours,

[Employee's Address]

Dear [Employee's name]:

As mentioned by Mr. Dillingham, we are conducting a study of factors related to the health behaviors of employees. I do not have to tell you that health and health care are extremely important to each of us. Health-related policies and practices that affect all of us are being instituted every day. Yet, often these policies and practices are instituted with little clear information about their impact on the health and welfare of each of us. Our research is aimed at gathering such information.

Since the work place plays a major role in providing medical benefits and in affecting a number of behaviors related to our health, the Cook Institute for Research and Education of Grand Rapids along with Michigan State University is conducting a study of work and health and well-being. Employment settings may encourage or discourage people to engage in healthy behavior. Attempts to affect health through mandatory or voluntary means lead to such things as rules for smoke free work spaces or the choices of foods in the cafeteria. We are looking into a number of factors related to health at work in hopes of learning what works well and what does not. It is our hope that by learning more about health-related practices at work, health benefit systems, and peoples' health-related behaviors, better informed policy and practice decisions can be made at the national level, by employers, and by you and me.

Part of the study involves administering a survey to employees. The survey takes about 15 minutes to complete. We have randomly selected a number of [hospital name] employees and are asking them to volunteer to complete a survey anonymously. You have been selected as part of that sample. Although we can offer no direct payment for this, we hope they will agree with us that having data on which to make better informed decisions regarding health is critical to all of us and that you are willing to provide such data. For our part, we will provide you with a letter informing you of some of the conclusions we have reached from the data when the analyses are complete.

Data collected from [hospital name] will be reported in one of two ways. The primary way will be to combine it with other organizations where employees were asked the same questions. A report will be prepared from this to be submitted to scientific and professional journals. A second report will be prepared only for [hospital name]. Here all the data will be reported in aggregate form in a way that will be focused toward identifying things that are working well and those that might be improved concerning peoples' health and the nature of their work, work setting, and health benefits. This information will be shared with participating organizations and their employees.

Participation in the study simply involves filling out the enclosed survey booklet. Once you have completed the survey, please place the booklet into the self-addressed stamped envelope so that it may be returned directly to us.

Thank you in advance for your participation.

Sincerely yours,

APPENDIX B

CONSENT FORM USED FOR HOSPITAL WITH INCENTIVE-BASED BENEFITS SYSTEM

Survey No. _____

Consent Form
IRB 96-150
Spring 1996

I understand that I have been randomly chosen to participate in the study conducted by researchers from Michigan State University in association with [hospital name].

My participation involves the completion of a questionnaire about the Health Quotient Program and other conditions related to work and health. Responses to the questionnaire will be kept strictly confidential. Any publication of the data will be aggregated with no names or individual identification. My participation in this study is voluntary. If I choose to fill out the questionnaire and find items in it that I do not wish to complete, I may leave them blank.

As has been explained to me, the questionnaire will be matched to personnel records on file with my employer. I give the Michigan State University researchers permission to access my Health Quotient data and my employment records that might be related to the health care system. In this way, health behaviors can be related to attitudes and opinions.

Signature: Date:

_____ _____

Print Name:

_____

APPENDIX C

CONSENT FORM USED IN TRADITIONAL HEALTH BENEFITS HOSPITAL

Survey No. _____

Consent Form
IRB 96-150
Fall 1996

I understand that I have been randomly chosen to participate in the study conducted by researchers from Michigan State University in association with the Cook Institute.

My participation involves the completion of a questionnaire about conditions related to work and health. Responses to the questionnaire will be kept strictly confidential. Any publication of the data will be aggregated with no names or individual identification. My participation in this study is voluntary. If I choose to fill out the questionnaire and find items in it that I do not wish to complete, I may leave them blank.

Signature: Date:

_____ _____

Print Name:

_____

APPENDIX D

INTRODUCTION OF SURVEY FOR THE HOSPITAL USING AN INCENTIVE-BASED BENEFITS PROGRAM

This questionnaire is being administered to a sample of present and former employees of the [hospital name] organization. A primary objective of the survey is to better understand the reactions of employees to the health benefits program and to assess the nature of the work climate with respect to health. A secondary concern is general levels of satisfaction and opinions about working at [hospital name]. For the most part, these feelings and reactions will be studied with respect to possible health programs. For scientific purposes, the data collected will be combined with data collected at other sites outside of the [hospital name] system in order to gain a better understanding of health care systems from a broader perspective than just one company.
As a former employee of [hospital name] your perspective is unique and valuable to both [hospital name] itself and the research team from Michigan State University.

Your participation in the study is voluntary and all data you provide will be kept strictly confidential. If you should decide not to complete any or all of the questionnaire, that is your right. The number on the top of the questionnaire is used to be able to pair questionnaire opinion data with Health Quotient data and also personnel records data. As a protection of confidentiality, responses to the questionnaire will never appear in any form matched with an individual's name. Filling out the questionnaire will represent your willingness to be in the study and allow us to create a record with no name, but with both survey data and employment record data.

To complete the questionnaire, please turn the page and follow the instructions. If you have any questions, feel free to ask us. For those of filling this out at the worksite, we will be there to respond to your concerns. For those of you doing this by mail, contact us if you have any questions.

Thank you in advance for your participation.

APPENDIX E

INTRODUCTION OF SURVEY FOR HOSPITAL USING TRADITIONAL BENEFITS

This questionnaire is being administered to a sample of present employees of the [hospital] organization. A primary objective of the survey is to better understand the reactions of employees to their health benefits program and to assess the nature of the work climate with respect to health. A secondary concern is general levels of satisfaction and opinions about working at [hospital]. The data will be combined with data collected at other sites outside of the [hospital] system in order to gain a better understanding of health care systems from a broader perspective than just one employer. As an employee of [hospital your perspective is unique and valuable. When combined with many other employees' views these are useful to both [hospital] itself and the research team from Michigan State University.

Your participation in the study is voluntary. All data are anonymous. Do not put your name on the questionnaire. Numbers do appear on return envelopes to be used only for second mailings if necessary. If you should decide not to complete any or all of the questionnaire, that is your right. As a protection of confidentiality, responses to the questionnaire will never appear in any form matched with an individual's name. Filling out the questionnaire will represent your voluntary participation in the study.

Please turn the page and follow the instructions. Thank you in advance for your participation.

APPENDIX F

ITEMS ADAPTED TO MEASURE FAIRNESS PERCEPTIONS IN THE INCENTIVE-BASED BENEFITS SYSTEM AND THE TRADITIONAL SYSTEM UNLESS INDICATED

Item #	Incentive system items	Traditional system items	Specific Fairness Domain	Reverse Coding
1	My employer provides a reasonable explanation for the way our health benefits system is designed	Same	Procedural Justice	
2	Staff members who are greater health risks should have to pay more for their health insurance	Same	Distributive Justice	
3	It is not fair for staff members who live healthy lifestyles to pay the same for company health insurance as those who don't	Same	Distributive Justice	
4	Our health benefits system is a fair one	Same	Distributive Justice	
5	Since the health of dependents affects the cost of health insurance, it is most fair to consider dependents health and health behaviors along with that of staff members	Same	Distributive Justice	
6	The administration of the [program name] treats all employees fairly	The administration of the health benefits system treats all employees fairly	Distributive Justice	
7	Some groups of staff members are unfairly treated by the [program name]	Some groups of staff members are unfairly treated by the health benefits system	Dropped	R

8	When it comes to health benefits, all staff members are treated the same	Same	Distributive Justice	
9	The [program name] is biased against those with uncontrollable health problems	The health benefit system is biased against those with uncontrollable health problems	Dropped	R
10	The [program name] favors some groups of staff members	The health benefits system favors some groups of staff members	Distributive Justice	R
11	Staff members who are sometimes less than perfectly honest take advantage of the [program name]	Staff members who are sometimes less than perfectly honest take advantage of the health benefits system	Dropped	R
12	When I have a question or need to talk to someone about health care benefits, I am treated with respect and dignity	Same	Procedural Justice	
N/A	Any testing done by the [assessment center name] related to the [program name] is done in a way that respects my privacy	Not applicable	Dropped	
13	I like the way that they treat me when I have to deal with anything regarding the [program name]	I like the way that they treat me when I have to deal with anything regarding the health benefits system	Procedural Justice	
14	When I disagree with something regarding the [program name], there is an appeal process that is fair	When I disagree with something regarding benefits there is an appeal	Procedural Justice	
N/A	If I suspect that there has been a mistake regarding my Health Quotient, the [benefits office] is very willing to address it with me	Not applicable	Dropped	
	I feel free to raise questions	I feel free to raise	Procedural	

15	about the [program name] with my supervisor or the benefits office	questions about the health benefits system with my supervisor or the benefits office	Justice	
16	They listen to you here if you have concerns about the [program name]	They listen to you hear if you have concerns about health benefits	Procedural Justice	
17	The health care system at this organization is a fair one	Same	Dropped	
18	My health care system is administered fairly	Same	Dropped	
19	Staff working with health care treat me fairly	Same	Procedural Justice	
20	Staff members at [hospital name] get what they deserve from the health care system	Same	Distributive Justice	
21	The cost of the health care system is fair to staff members	Same	Dropped	
22	I am satisfied with the amount this health care system requires me to pay for health care	Same	Dropped	
23	I feel that the costs to me of the health care system are unfair	Same	Dropped	R

APPENDIX G

FACTOR SOLUTIONS FOR FAIRNESS ITEMS

	Primary 2-factor solution				Secondary 2-factor solution	
	Incentive Sample (N=243)		Traditional Sample (N=273)		Incentive Sample (N=243)	
Items	Factor1	Factor2	Factor1	Factor2	Factor1	Factor 2
4	.757	.301	.637	.299	.712	.368
20	.749	.358	.733	.201	.675	.407
2	.734	-.010	-.174	.746	.706	.114
17	.707	.443	.746	.227	Dropped	
6	.694	.369	.560	.405	.632	.465
5	.666	.006	-.094	.696	.592	.180
3	.664	-.106	-.181	.787	.659	.018
18	.645	.510	.769	.152	Dropped	
21	.639	.414	.693	.259	Dropped	
8	.604	.236	.536	.369	.520	.317
22	.555	.412	.632	.036	Dropped	
10	.545	.132	.504	.462	.434	.220
23	.479	.319	.592	.170	Dropped	
9	.412	.209	.400	.410	Dropped	
7	.316	.189	.526	.425	Dropped	
16	.265	.710	.719	-.113	.225	.710
13	.309	.702	.725	-.120	.282	.671
15	.288	.698	.614	-.025	.232	.699
12	-.032	.675	.637	-.158	-.025	.609
14	.294	.582	.413	.000	.268	.510
1	.337	.576	.644	-.063	.298	.595
19	.349	.500	.751	-.026	.280	.485
11	-.020	.133	.205	.317	Dropped	

APPENDIX H

ITEMS CREATED OR ADAPTED TO MEASURE HEALTH-RELATED BEHAVIORS IN THE INCENTIVE-BASED BENEFITS SYSTEM AND THE TRADITIONAL BENEFITS SYSTEM PRESENTED BY EACH HEALTH DIMENSION

Health Item	**Symbol**	**Health Behavior Measured**	**Reverse Coded**
I consider myself a very relaxed person, under little stress.	**ST1**	Stress	
I am almost always tense and I find it difficult to relax.	**ST2**	Stress	R
I am effective in managing my stress.	**ST3**	Stress	
Generally, I am satisfied with my life.	**ST4**	Stress	
My relationships with my family and friends are strong.	**ST5**	Stress	
I get along well with my family and friends.	**ST6**	Stress	
I regularly experience significant tension from my job.	**ST7**	Stress	R
I rarely seem to have enough time to get all my work done.	**ST8**	Stress	R
My co-workers are often pushed to the limit due to the amount of work they have.	**ST9**	Stress	R
Staff members here are under a lot of pressure.	**ST10**	Stress	R
Staff members here worry because of their jobs.	**ST11**	Stress	R
I would smoke cigarettes or cigars while working if it were allowed.	**TOB1**	Tobacco Use	R
I feel that smoking is a nice way to take a break from work.	**TOB2**	Tobacco Use	R
I like to smoke on my work breaks.	**TOB3**	Tobacco Use	R
I often see other staff members smoking while at work.	**TOB4**	Tobacco Use	R

I think smoking is a bad habit.	**TOB5**	Tobacco Use	
I am proud to be a non-smoker.	**TOB6**	Tobacco Use	
I would like a lenient smoking policy, one that allows smoking at work.	**TOB7**	Tobacco Use	R
I feel that it is not acceptable to smoke at this workplace.	**TOB8**	Tobacco Use	
For the past year I have not smoked a single cigarette.	**TOB9**	Tobacco Use	
During the past year, I have not used any tobacco products.	**TOB10**	Tobacco Use	
I use tobacco products at least once a day.	**TOB11**	Tobacco Use	R
I use tobacco products once in a while, but I do not consider my use a habit.	**TOB12**	Tobacco Use	R
I regularly used tobacco products in the past, but I no longer do.	**TOB13**	Tobacco Use	
I drink at least one alcoholic beverage at least once a week.	**ALC1**	Alcohol Use	R
I enjoy an alcoholic drink after work or on the weekend with friends.	**ALC2**	Alcohol Use	R
An alcoholic beverage after work helps me to relax.	**ALC3**	Alcohol Use	R
I rarely drink alcohol.	**ALC4**	Alcohol Use	
I drink alcoholic beverages almost everyday.	**ALC5**	Alcohol Use	R
I will have an alcoholic beverage every once in a while.	**ALC6**	Alcohol Use	R
I eat healthy snacks such as carrot sticks, low-fat yogurt, or fruit when I'm hungry between meals.	**NUT1**	Nutrition/Diet	
I think I am a good role model for making nutritious food choices.	**NUT2**	Nutrition/Diet	
Honestly, I have unhealthy eating habits.	**NUT3**	Nutrition/Diet	R
I make an effort to include vegetables, salads, or fruit in my meals at work.	**NUT4**	Nutrition/Diet	
I am concerned about the amount of cholesterol in the foods I eat.	**NUT5**	Nutrition/Diet	
I regularly choose high fat foods for lunch because I am just too busy.	**NUT6**	Nutrition/Diet	R

I rarely, if ever, eat high fat foods.	**NUT7**	Nutrition/Diet	
Often, while I am at work, I eat potato chips, or candy bars for a quick snack.	**NUT8**	Nutrition/Diet	R
I make an effort to include whole grains, fruits, vegetables, and lowfat dairy in each of my meals.	**NUT9**	Nutrition/Diet	
I really don't care about what I eat.	**NUT10**	Nutrition/Diet	R
I just grab whatever I can for lunch while I'm at work.	**NUT11**	Nutrition/Diet	R
I don't have time to worry about eating foods from the 5 basic food groups.	**NUT12**	Nutrition/Diet	R
I always buckle my seatbelt while I am driving or riding in a motor vehicle.	**SAF1**	Motor Vehicle Safety	
I rarely buckle my seatbelt while in a motor vehicle.	**SAF2**	Motor Vehicle Safety	R
I ride a motorcycle.	**SAF3**	Motor Vehicle Safety	R
When I ride (or if I rode) a motorcycle, I always wear a helmet.	**SAF4**	Motor Vehicle Safety	
During the past 5 years, I have almost always had one or more points on my driving record.	**SAF5**	Motor Vehicle Safety	R
I rarely have even one point on my driving record.	**SAF6**	Motor Vehicle Safety	
I never drive in a motor vehicle when I have had too much to drink.	**SAF7**	Motor Vehicle Safety	
I always make sure that we have a designated driver when I know that I will be drinking away from home.	**SAF8**	Motor Vehicle Safety	
I am capable to drive home after less than 2 drinks.	**SAF9**	Motor Vehicle Safety	R
I never drive home if I have had even one alcoholic beverage.	**SAF10**	Motor Vehicle Safety	
I belong to a fitness or health club.	**EXER1**	Fitness/Exercise	
I always find time to exercise before or after work.	**EXER2**	Fitness/Exercise	
I would consider myself a "health nut" because I like to exercise so much.	**EXER3**	Fitness/Exercise	

I am actively working to improve my physical fitness.	**EXER4**	Fitness/Exercise	
I participate in sports to keep physically active.	**EXER5**	Fitness/Exercise	
I walk for exercise during lunch or other breaks.	**EXER6**	Fitness/Exercise	
I exercise, other than walking, during normal working hours.	**EXER7**	Fitness/Exercise	
I think that people who exercise are a bit "crazy".	**EXER8**	Fitness/Exercise	R
I feel that exercise is not very important.	**EXER9**	Fitness/Exercise	R
Honestly, I think exercise is a waste of my time.	**EXER10**	Fitness/Exercise	R
I really think the benefits of exercise are overrated.	**EXER11**	Fitness/Exercise	R

APPENDIX I

FACTOR SOLUTION FOR HEALTH BEHAVIOR SELF-REPORT ITEMS

	Factor1	Factor2	Factor3	Factor4	Factor5
EXER10	.959	-.002	-.001	.005	.006
SAF2	.936	.004	.005	.006	-.003
EXER11	.919	-.002	.001	.008	.006
SAF3	.916	-.000	.004	.003	.001
EXER9	.899	-.005	-.001	.008	.106
ALC7	.880	.105	-.007	.005	-.004
EXER8	.877	-.004	-.002	.007	.122
SAF5	.866	.004	.007	.004	-.003
NUT10	.860	.004	.112	.002	.001
TOB12	.846	.122	-.006	.104	-.102
NUT6	.759	.005	.122	.005	.007
NUT11	.758	.005	.132	-.004	.008
NUT12	.712	.004	.155	-.001	.007
ALC3	.710	.009	.000	.007	-.001
NUT8	.651	.005	.114	.004	.008
TOB10	-.001	.868	.003	.005	.004
TOB9	-.002	.867	-.000	.006	.009
TOB3	.008	.861	.005	.117	.004
TOB11	.004	.842	.003	.006	.008
TOB2	.007	.810	.006	.146	.008
TOB1	.010	.743	.005	.233	-.000
TOB7	.007	.500	.002	.277	.002
NUT2	.007	.005	.788	.158	.245
NUT1	.004	.003	.766	.006	.213
NUT9	.005	.002	.763	-.001	.206
NUT4	.002	.003	.697	.003	.119
NUT7	-.000	-.001	.635	.005	.287
NUT5	.005	.005	.631	-.009	.165
SAF1	.009	.008	.470	.004	.010
ST10	.010	.139	-.001	.815	.007
ST9	.006	.008	-.001	.801	.007
ST8	.180	.003	.005	.724	.106
ST7	.009	.163	.005	.720	-.003
ST11	.000	.161	.000	.715	.112
ST1	.005	.144	.172	.563	.008
EXER3	.007	.008	.345	.102	.742
EXER5	.002	.002	.194	.003	.730
EXER2	-.002	.007	.377	.123	.703
EXER1	.109	.003	.009	.001	.636
EXER7	.108	.002	.150	.006	.635

	Factor1	Factor2	Factor3	Factor4	Factor5
EXER4	-.001	.007	.477	.002	.578
EXER6	-.001	.003	.269	.125	.530
SAF7	.009	.009	.133	-.005	.160
SAF8	.004	.003	.129	.002	.237
SAF9	.162	-.001	.181	.006	.009
SAF11	106	.105	.223	.004	.198
SAF4	.172	.009	.210	.109	-.112
ALC2	.271	.003	.004	.147	.003
ALC1	.432	.006	.001	.007	-.000
SAF10	.004	.009	.198	.006	.146
ALC8	-.317	.005	.127	.236	.009
ST5	.008	.183	.156	.237	.108
ST6	.009	.184	.141	.229	.107
ST4	.002	.231	.194	.309	.003
ST3	-.001	.160	.184	.396	.135
ALC5	.005	-.000	-.003	.009	.009
ALC4	.005	-.004	.009	.008	.146
TOB13	.003	.141	.004	.127	.009
TOB5	.004	.150	-.000	.003	-.001
TOB8	.000	.296	.009	.216	.002
TOB6	.003	.446	.010	.128	.003
NUT3	.311	.006	.244	.134	.142
ST2	.010	.143	.220	.472	-.004
SAF6	.007	.006	.204	.000	.010
TOB4	.200	.200	-.000	.179	.001
ALC6	-.003	.159	-.001	.001	.128

	Factor6	Factor7	Factor8	Factor9	Factor10
EXER10	.007	.002	.000	.001	.000
SAF2	.006	.001	-.000	.003	-.002
EXER11	.009	-.000	.003	.000	-.002
SAF3	.003	.002	-.001	.001	.000
EXER9	.005	.001	-.001	-.002	.004
ALC7	-.001	.248	.007	.006	.003
EXER8	.006	.003	.003	.002	-.003
SAF5	010	-.001	-.004	-.003	.001
NUT10	.005	-.001	.003	.002	.001
TOB12	-.004	.110	-.000	.007	.003
NUT6	.005	.000	.002	.003	.006
NUT11	.001	.005	.007	.003	.003
NUT12	.005	.002	.006	.010	.004
ALC3	-.002	.501	.010	.002	.002
NUT8	.005	.003	.005	-.005	.003
TOB10	.010	-.002	-.002	-.004	.004
TOB9	.009	.000	-.007	-.003	.002
TOB3	.001	.006	.146	.005	.137
TOB11	-.002	.003	.009	.001	.002
TOB2	.003	.007	.176	.005	.148
TOB1	.004	.003	.172	.106	.174
TOB7	-.002	.009	.138	-.001	.400
NUT2	.009	.001	.003	.002	-.003
NUT1	.005	.002	-.000	.009	.005
NUT9	.003	.005	.126	-.003	.004
NUT4	.002	.113	.179	-.005	-.006
NUT7	.150	.002	-.008	.004	.110
NUT5	.198	.003	.008	.007	-.000
SAF1	.310	-.002	.158	-.005	.008
ST10	.001	.009	.146	.003	.005
ST9	.001	.007	.009	.136	.005
ST8	.002	.009	-.002	-.003	.006
ST7	.000	.001	.109	.008	.001
ST11	.002	.118	.192	.004	.140
ST1	-.001	.001	.238	.008	.006
EXER3	.008	.002	.002	.002	.008
EXER5	.008	-.002	.010	.124	.000
EXER2	-.001	.003	.005	.001	.003
EXER1	.149	-.003	.003	.005	.005
EXER7	.154	.139	-.002	.008	-.006
EXER4	.113	-.003	.126	.007	.002
EXER6	.143	.133	.006	.003	-.104

	Factor6	Factor7	Factor8	Factor9	Factor10
SAF7	.815	-.000	.007	.008	-.001
SAF8	.785	.001	.005	-.004	-.003
SAF9	.751	.158	.009	.004	.007
SAF11	.492	.238	-.006	-.176	.005
SAF4	.348	-.010	-.176	.256	.117
ALC2	.005	.851	.004	.006	.003
ALC1	-.000	.746	.006	.006	.005
SAF10	.336	.609	-.006	.009	-.105
ALC8	.110	.538	-.010	.154	.009
ST5	.004	-.001	.823	.005	.136
ST6	.007	-.001	.806	.010	.154
ST4	.008	.009	.640	.108	.002
ST3	.002	.000	.444	.009	.006
ALC5	-.000	.010	.002	.801	.004
ALC4	.165	.106	.005	.714	.160
TOB13	-.168	-.001	.179	.574	-.009
TOB5	.002	-.003	.146	.010	.740
TOB8	.005	.005	.006	.004	.570
TOB6	.001	.007	.006	-.002	.519
NUT3	.147	-.004	.007	.005	.005
ST2	.135	-.003	.259	.131	.009
SAF6	.192	-.003	-.007	.134	.157
TOB4	.008	.002	-.004	.133	.245
ALC6	.271	.303	.177	-.213	.295

	Factor 11	Factor12	Factor13
EXER10	.003	.001	-.002
SAF2	-.004	.007	.000
EXER11	-.001	.001	-.002
SAF3	-.005	.003	-.003
EXER9	-.001	-.001	-.005
ALC7	-.160	.005	.007
EXER8	.002	-.002	.001
SAF5	-.006	-.003	.008
NUT10	.204.	002	.001
TOB12	-.005	.008	.005
NUT6	.398	-.002	-.004
NUT11	.430	.004	-.004
NUT12	.435	.006	.003
ALC3	-.138	.002	.003
NUT8	.487	-.002	-.006
TOB10	.002	.177	.159
TOB9	.004	.178	.166
TOB3	-.002	-.008	-.129
TOB11	.004	.008	.117
TOB2	-.001	-.008	-.145
TOB1	.003	-.120	-.244
TOB7	.001	-.185	-.113
NUT2	.002	005	-.001
NUT1	.004	.118	-.001
NUT9	.007	.007	.002
NUT4	.009	-.007	.009
NUT7	.007	008	.001
NUT5	-.001	.003	.005
SAF1	.115	-.180	.008
ST10	.004	-.105	-.001
ST9	.004	.001	.009
ST8	.001	.117	.005
ST7	.006	.192	-.008
ST11	-.003	-.155	-.007
ST1	-.002	.491	-.010
EXER3	-.001	-.001	.005
EXER5	-.001	.009	-.002
EXER2	.001	-.002	.001
EXER1	.002	-.002	-.126
EXER7	.111	.008	188
EXER4	-.007	-.008	-.001

	Factor11	Factor12	Factor13
EXER6	.174	-.006	.168
SAF7	.009	.003	.126
SAF8	.004	.001	.144
SAF9	.003	.001	-.010
SAF11	-.001	.144	-.009
SAF4	-.009	-.184	.172
ALC2	-.008	.003	.003
ALC1	-.127	.009	.004
SAF10	.235	-.134	-.161
ALC8	.223	-.010	-.001
ST5	-.003	.000	-.002
ST6	-.007	-.001	-.002
ST4	.169	.201	.003
ST3	.010	.403	-.003
ALC5	-.003	.003	.001
ALC4	.001	.007	-.105
TOB13	.010	.000	.183
TOB5	.007	.129	.003
TOB8	-.003	-.219	.005
TOB6	.001	.163	.154
NUT3	.652	.001	.007
ST2	-.004	.505	-.007
SAF6	.005	-.004	.676
TOB4	.003	.326	-.407
ALC6	-.145	.199	.305

APPENDIX J

ITEMS CREATED TO MEASURE PERCEPTIONS OF CONTROL OVER OUTCOMES AND HEALTH BEHAVIORS IN THE INCENTIVE-BASED BENEFITS SYSTEM AND THE TRADITIONAL SYSTEM UNLESS INDICATED

1. Perceived control over health.

Consider each of the dimensions below individually and answer the following items based on how POSSIBLE you feel it is to CHANGE your health level on each health dimension within the next year. Please keep in mind, this statement is not referring to your Health Quotient Score, just your general opinion about how easily you could change your health level on each dimension.

1. *Cholesterol level*
2. *Blood pressure*
3. *Body fat*
4. *Fitness level*
5. *Motor vehicle safety*
6. *Tobacco use*
7. *Alcohol use*
8. *Nutritional habits*

Responses were indicated on a five-point Likert-type scale anchored at *Not at all Possible* to *Very Possible.*

2. Perceived control over outcomes*

Assume you changed your behaviors to try to improve your health. How likely is it that your overall Health Quotient Score would improve?

1. *Cholesterol Level*
2. *Blood Pressure*
3. *Body Fat*
4. *Fitness Level*
5. *Motor Vehicle Safety*
6. *Tobacco Use*
7. *Alcohol Use*
8. *Nutritional Habits*

Responses were indicated on a five-point Likert-type scale anchored at *Extremely Unlikely* to *Extremely Likely.*

*Denotes that these data were not collected within the traditional benefits system.

APPENDIX K

ITEMS CREATED TO MEASURE PERCEPTIONS OF COMMITMENT TO CHANGE HEALTH-RELATED BEHAVIORS IN THE INCENTIVE-BASED BENEFITS SYSTEM AND THE TRADITIONAL BENEFITS SYSTEM

***Please consider how Willing you are** to work on improving your health on each of the eight health dimensions to a level within a healthy range.*

1. *Cholesterol level*
2. *Blood pressure*
3. *Body fat*
4. *Fitness level*
5. *Motor vehicle safety*
6. *Tobacco use*
7. *Alcohol use*
8. *Nutritional habits*

Responses were indicated for each item on a Likert-type five point scale with anchors at *Not at all Willing* and *Extremely Willing*.

Appendix L.

EIGHT ITEMS CREATED TO MEASURE PERCEPTIONS OF ACCURACY IN THE INCENTIVE-BASED BENEFITS SYSTEM

For each of the following statements, please rate how much you agree with each statement according to the scale described below.

1. *The blood test to measure C/HDL for the Health Quotient is accurate.*
2. *The pressure cuff test to measure blood pressure for the Health Quotient is accurate.*
3. *The caliper test used to measure body fat for the Health Quotient is accurate.*
4. *The fitness walk test to measure fitness for the Health Quotient is accurate.*
5. The self report measure to estimate motor vehicle safety for the Health Quotient is accurate.
6. *The self report used to measure tobacco use for the Health Quotient is accurate.*
7. *The self report used to measure alcohol consumption for the Health Quotient is accurate.*
8. *The self report used to measure nutritional behavior for the Health Quotient is accurate.*

Responses were indicated on a five-point Likert-type scale anchored at *Strongly Disagree* and *Strongly Disagree*.

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