

SOCIAL COGNITIVE CORRELATES OF PHYSICAL EXERCISE PARTICIPATION
IN THE TOTAL WELLNESS PROGRAM

THESIS

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by

Cecilia F. Montano, B.S.

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ABSTRACT

SOCIAL COGNITIVE CORRELATES OF PHYSICAL EXERCISE PARTICIPATION IN THE TOTAL WELLNESS PROGRAM

by

Cecilia F. Montano, B.S.

Texas State University–San Marcos

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SUPERVISING PROFESSOR: MARIA CZYZEWSKA

Although physical activity is associated with numerous health benefits (Kahn et al., 2002; Fentem, 1994; Petruzzello, Landers, Hatfield, Kubitz & Salazar, 1991), physical activity levels in the U.S. remain low (Dominick, & Morey, 2006). In an effort to promote a healthy lifestyle that incorporates regular physical exercise, corporations have implemented health promotion programs (HPP) in the workplace. However, the impact of HPPs are marginal due to low employee participation (Linnan, Sorensen, Colditz, Klar, & Emmons, 2001). The purpose of this study was to investigate perceived

social-cognitive factors of Texas State University-San Marcos faculty and staff associated with participation in the Total Wellness program in order to better understand why participation rates are low and recommend strategies to improve program participation.

CHAPTER I

INTRODUCTION

Physical activity is associated with numerous physical and mental health benefits, including reduced risk of all-cause mortality, cardiovascular disease, ischemic stroke, type 2 diabetes, colon cancers, osteoporosis, depression (Kahn et al., 2002), renal disease (Fentem, 1994) and anxiety (Petruzzello, Landers, Hatfield, Kubitz & Salazar, 1991). Despite decades of effort to promote an active lifestyle and physical fitness, only about a quarter of Americans achieve recommended levels of physical activity and about 30 % report getting no regular exercise (Dominick & Morey, 2006). Consequently, obesity rates in the U.S. are alarming, with only the state of Colorado having an obesity rate of less than 20 % among its residents in 2007 (CDC, 2008). Physical inactivity is not only a local concern, it affects individuals worldwide. The World Health Organization (2009) reports that 1.9 million global deaths are attributable to physical inactivity. Although some individuals from industrialized nations do report engaging in health protective behaviors like physical exercise, research shows that these behaviors are remarkably inconsistent (Hall, Fong, Epp & Elias, 2008).

In an effort to promote a healthy lifestyle that incorporates regular physical exercise, corporations have implemented health promotion programs in the workplace. However, results from randomized trials of worksite health promotion programs have achieved modest health behavior change outcomes (Linnan, Sorensen, Colditz, Klar &

Emmons, 2001).

Texas State University-San Marcos has also implemented a worksite health promotion program, the Total Wellness program. Like other health promotion programs, the goal of the Total Wellness program is to provide employees the means to assess their current health status and offer opportunities to improve their health (McAllister & Broeder, 1993). However, health behavior change outcomes produced by Total Wellness and other health promotion programs are modest, due to relatively low employee participation (Linnan, Sorensen, Colditz, Klar & Emmons, 2001). Additionally, only the healthiest employees tend to participate in worksite health promotion programs, resulting in a ceiling effect when assessing health improvements related to program participation. The purpose of this study was to investigate perceived social-cognitive factors of Texas State faculty and staff associated with participation in the Total Wellness program in order to better understand why participation rates are low and recommend strategies to increase program participation.

Importance of Regular Physical Exercise Activity

Research shows that physical exercise produces a variety of benefits that are sustained with the adoption of a physically active lifestyle. Emery et al. (1998), for example, found that individuals with chronic obstructive pulmonary disease (COPD), a leading cause of death and disability in the U.S. (CDC, 2003), who did not exercise were more likely to suffer physical and psychological setbacks. In contrast, participants who exercised gained a cognitive, psychological, and physical boost including improved cardiovascular fitness, reduced anxiety, and improved cognitive functioning, as measured by a test of verbal fluency. These benefits were completely lost if the person did not

routinely engage in physical activity, as shown by one-year follow up results (Emery et al., 2003). Similar benefits were found by Fox (1999) in the treatment of clinical depression, reduction of state and trait anxiety, and enhancement of global self-esteem. These findings highlight the need for health professionals to not only promote physical exercise initiation, but also to develop interventions that encourage the adoption of physical exercise as a permanent lifestyle component.

In order to promote and maintain health, the American College of Sports Medicine and the American Heart Association (2007) recommend that individuals aged 18-65 engage in moderate-intensity aerobic physical activity (e.g., walking briskly or cycling at moderate speeds) for a minimum of 30 minutes on five days each week (Haskell et al., 2007). Alternatively, individuals may engage in vigorous-intensity activity (e.g., jogging) for a minimum of 20 minutes on three days each week (Haskell et al., 2007). Although the benefits of physical exercise participation are well known, they are often reduced due to the failure to meet these recommendations and/or the inability of people to maintain the recommended behavior for a long term (e.g., Dishman, 1991; Sniehotta, Scholz & Schwarzer, 2005). Furthermore, some individuals consider initiating a more active lifestyle with a regular physical exercise routine, but experience difficulty with implementation of this intention (Schwarzer, 2008). To assist with the implementation and maintenance of a physically active lifestyle, organizations have introduced health promotion programs to the worksite.

Health Promotion Programs in the Worksite

Worksites have often been viewed as ideal settings for health promotion programs (Sorensen et al., 1999) due to the easy longitudinal access to a large number of people

(Kwak, Kremers, Van Baak & Brug, 2005), where they spend a substantial proportion of their time (Kruger, Yore, Bauer & Kohl, 2007). Worksites offer the possibility to conduct multi-level interventions, directed at individual, organizational and environmental determinants of health and health behaviors (Kwak, Kremers, Van Baak & Brug, 2005). A recent review of the literature concluded that worksite-based interventions are effective in changing physical activity and nutrition behaviors of the working population (Matson-Koffman, Brownstein, Neiner & Greaney, 2005) and that organizational health promotion programs are associated with increased organizational performance through increased job satisfaction, improved morale, and decreased turnover and absenteeism (Parks & Steelman, 2008; Smith, Everly & Haight, 1990).

Due to the astronomical costs associated with absenteeism, organizations have traditionally resorted to the implementation of health promotion programs in the work setting (Stambor, 2006). According to the American Institute of Stress, organizations lose approximately \$300 billion dollars a year because of absenteeism, turnover, workplace stress, and health care costs (Stambor, 2006). Many employers have found that implementing health education and screening programs is more cost effective than treating employees who develop a disease as a result of being exposed to preventable risk factors like smoking, drug use, or poor diet (Astrup, McGovern & Kochevar, 1992; McAllister & Broeder, 1993). Employers, therefore, highly value possible monetary long-term benefits that can result from these programs, via improved employee health, lower illness-related absenteeism rates, and greater control of health care (e.g., Bly, Jones & Richardson, 1986; Stambor, 2006).

Worksite health promotion programs are on or off-site services sponsored by organizations, which attempt to promote good health or to identify and correct potential health-related problems (Wolfe, Parker & Napier, 1994). The goals of health promotion programs include promoting employee understanding of the benefits of a healthy lifestyle, providing employees with means of assessing their current health status, and providing employees with opportunities to improve their health (e.g., Ardell, 1977; Astrup, McGovern & Kochevar, 1992; McAllister & Broeder, 1993). Parks and Steelman (2008) classified health promotion programs into two types: *fitness oriented* and *comprehensive* programs. Fitness oriented programs provide on- or off-site membership to health clubs in which participants enjoy aerobic and non-aerobic activities, as well as weight training. Comprehensive wellness programs include both a fitness component and an educational component such as nutrition or stress reduction classes. The Total Wellness program at Texas State is an example of a fitness oriented worksite health promotion program.

Total Wellness Program at Texas State

The Total Wellness program involves a variety of group exercise classes, offered during the lunch hour and after the work day at the Jowers facility to Texas State faculty and staff. The program is offered every academic semester and includes unlimited access to any of the weekly classes, a health consultation at the start and end of the semester, weekly motivational e-mails with fitness tips and healthy eating recipes, and the use of heart rate monitors during exercise classes. The health consultation involves a personal meeting with a Total Wellness program staff member in which the individual's current

health status is evaluated through body size and composition assessments, personal fitness goals are identified, and methods to reach these goals are discussed. This session serves as a baseline measure that is used to track changes in the individual's health and fitness as a result of the program.

The Total Wellness program offered seven classes this 2008-2009 academic year: Noon and Evening Express, Total Body Sculpting, Rock Hard Core, Foundations, Hatha Yoga, Fusion, and Tone and Chisel. Group exercise classes involve aerobics, core work, low-impact cardiovascular training, functional resistance training targeting all major muscle groups, stretching to increase flexibility, yoga and weight lifting techniques.

Factors that Limit the Impact of Interventions

Despite the positive health and work-related outcomes associated with participation in worksite health promotion programs, one of the predominant challenges confronting these programs remains: low program participation (Bungum, Orsak & Chng, 1997; Lovato & Green, 1990). Similar to other worksite health promotion programs, low program participation rates are also a challenge for the Total Wellness program (C. C. Clay, director of Total Wellness, personal communication, August 20, 2008). Employee participation in the Total Wellness program is alarmingly low, with a reported enrollment of only 89 individuals in the spring of 2008, the highest participation rate in its history (C. C. Clay, director of Total Wellness, personal communication, August 20, 2008). Low participation rates in health promotion programs limit the potential impact of these interventions on the population, and therefore, warrant further discussion.

Importance of Participation Rates on the Impact of Health Promotion Programs

In addition to producing the desired behavior change, successful health behavior interventions are determined according to the impact they have on the population at risk (Velicer et al., 2000). Impact is a product of the *efficacy of the physical exercise intervention* times its *participation rate* (Velicer & DeClemente, 1993). Efficacy is measured by the intervention's ability to produce the desired behavior change (Velicer et al., 2000), while the participation rate refers to the number of individuals taking part in the program relative to the total number of individuals recruited. Although some interventions are highly effective, producing their intended health behavior change outcomes, they may also be characterized by low participation rates. Low participation rates, in turn, yield an overall low impact on the population (Velicer et al., 2000). Proper evaluation of behavior change programs therefore, should consider both participation rates and program effectiveness. Health promotion program evaluations based on the impact factor, which take into account the participation rate, in addition to efficacy assessments, are able to produce a more accurate estimation of actual intervention effects.

Employee participation refers to employees who actively and voluntarily attend onsite health promotion programs sponsored by an employer (Linnan et al., 2001). According to Watson & Gauthier (2003), participation in organizational health promotion programs is often sporadic, due to its voluntary nature, and typically the most fit employees comprise the majority of participants. For example, Bungum, Orsak & Chng (1997) found that employees who exercised at their worksite health promotion program were less likely to smoke than employees who did not. Among companies with fitness-oriented health promotion programs, approximately 80 % of employees do not participate

and only half of those who do participate actually maintain the behavior for a long term (Morgan & O'Conner, 1988; Song, Shephard & Cox, 1982). These low participation rates may be explained by employees' perceived barriers to participation in worksite health promotion programs. It is important, therefore, to identify perceived barriers to participation in these programs among organizational employees and to understand how these perceived barriers interact with decisional and volitional processes.

Barriers to Physical Exercise Initiation and Maintenance

Broadly speaking, perceived barriers to action are associated with the obstacles encountered when undertaking a specific behavior (Grubbs & Carter, 2002). Perceived barriers may prevent the initiation of a new activity (e.g. *enrolling in a fitness program*) or decrease adherence to an existing pattern of activity (e.g. *maintaining participation in a fitness program*). Perceived barriers to initiation of a behavior are typically associated with the inconvenience of its enactment or expense of the behavior. On the other hand, perceived barriers to maintenance of the behavior are usually associated with its difficulty, time requirements, or personal cost (Grubbs & Carter, 2002).

Barriers specific towards physical exercise participation have been studied among a wide variety of populations, including different ethnic groups of U.S. middle-aged adults, college-aged adults, and the elderly population, (e.g., Buijs, Ross-Kerr, O'Brien Cousins & Wilson 2003; Lian, 1999; King et al., 2000; Sit, Kerr & Wong, 2008). In regards to perceived barriers to the initiation of physical exercise, research suggests that environmental factors play a significant role (Kruger, Carlson & Kohl, 2007). Among adults across the U.S., cost has been found to be the most common perceived barrier to the use of fitness facilities for physical exercise (Kruger, Carlson & Kohl, 2007).

Additionally, individuals report not participating in fitness programs because of lack of transportation and because exercise equipment that meets their needs are unavailable. Social factors associated with barriers to participation include the absence of an instructor to demonstrate proper equipment use. Barriers to physical exercise engagement unique to college undergraduates in the U.S. have been found to be related to physical exertion (Grubbs & Carter, 2002). College-aged individuals perceive physical exercise as tiring, fatigue producing, and hard work.

Fifty percent of new exercisers have difficulty maintaining a continuous physical exercise behavior and drop out of exercise programs within 3 to 6 months primarily due to several psychological and social factors (Dunn, Andersen & Jakicic, 1998). Psychological factors associated with adherence to physical exercise regimens include the fact that some individuals set overambitious goals that are difficult to achieve (Dunn, Andersen & Jakicic, 1998). When these goals are not met, individuals may experience disappointment and quit participation entirely. Closely related to overambitious goals is the second reason, the perceived lack of desired results (Dunn, Andersen & Jakicic, 1998). This may occur if individuals hold unrealistic expectations regarding the magnitude of change (e.g. magnitude of improvement in cardiovascular functioning) or the time required for change (e.g. expecting to lose x number of pounds in a short period of time). Additionally, physical exercise-related rewards are typically delayed, and some individuals faultily perceive this delay as a complete absence of improvement. Lastly, perceived lack of time contributes to the termination of physical exercise program participation. Competing daily activities and responsibilities may take precedence over

physical exercise program participation, resulting in a perceived lack of time to devote to the behavior (Dunn, Andersen & Jakicic, 1998).

Individuals also cease exercise program participation due to social factors such as, the lack of any exercise prescription or instruction (Dunn, Andersen & Jakicic, 1998). Individuals may be unaware of the exercise techniques appropriate for their body and necessary for attainment of their personal fitness goals. Another reason for exercise participation discontinuation is the lack of social support (Dunn, Andersen & Jakicic, 1998). Some individuals highly value the opinion of significant others in regards to the actions they should take. They may discontinue further participation in physical exercise because family members or close friends may disapprove of, or express indifference towards the behavior.

Applying Theory to Explain Low Physical Exercise Participation

Researchers have used various theoretical models to better understand participation in exercise (Brenes, Strube & Storandt, 1998), such as the Theory of Planned Behavior (Ajzen, 1985), Protection Motivation Theory (Rogers, 1983), Transtheoretical Model of Behavior Change (Prochaska & DiClemente, 1982), and the Health Action Process Approach (Luszczynska & Schwarzer, 2003). One of the most successful models in health promotion is the Theory of Planned Behavior (TPB) which has successfully been applied to a variety of health behavior change interventions (e.g., Hardeman et al., 2002), including in the promotion of physical exercise (e.g., Brickell, Chatzisarantis & Pretty, 2006).

The TPB is an extension of the earlier Theory of Reasoned Action, TRA (Ajzen & Fishbein, 1980) which hypothesizes that an individual's given intention is the most

immediate predictor of that behavior. Intention represents an individual's immediate behavioral orientation toward engaging in a given target behavior and it reflects the person's motivation towards enactment of the behavior. Intentions can be thought of as an individual's readiness to perform (Ajzen, 2006). According to the TPB (Figure 1), intentions toward a behavior are predicted by three constructs; attitude towards the behavior, subjective norm, and perceived behavioral control. Intentions and perceived behavioral control, subsequently predict behavior.

Attitude towards the behavior is a person's overall evaluation of the behavior and has two components: behavioral beliefs and outcome evaluations (Ajzen, 1985). Behavioral beliefs are beliefs about consequences of the behavior (e.g. jogging 3 times a week will result in weight loss), while outcome evaluations are the corresponding negative or positive judgments about each of these features of the behavior (e.g., losing weight is good). Attitude represents a person's assessment of his or her beliefs regarding the target behavior's effectiveness in producing outcomes and an evaluation of these outcomes (Ajzen, 1985). It is the degree to which performance of the behavior is positively or negatively valued by the individual (Ajzen, 2006). In the above example, physical exercise is positively valued by the individual.

The second TPB construct is subjective norm. Subjective norm is a person's own estimate of the social pressure to perform or not to perform the target behavior (Ajzen, 1985). Subjective norm has two components: normative beliefs and outcome evaluations. Normative beliefs are beliefs about how other people, who may be important to the individual, would like them to behave (e.g., my spouse wants me to exercise regularly at the local gym). Outcome evaluations are positive or negative judgments about each

normative belief (e.g., complying with my spouse's desire of my regular physical exercise participation is important to me).

Lastly, perceived behavioral control (PBC) is the extent to which a person feels able to enact the behavior (Ajzen, 1985; Ajzen, 1991). The PBC construct includes the perceived likelihood of encountering factors that will facilitate or inhibit the successful performance of the behavior, weighted by their perceived power to facilitate or inhibit performance (Ajzen, 1991). For example, an individual who feels strongly confident about his/her ability to walk a mile every day would have high perceived behavioral control for this behavior. The perceived behavioral control construct reflects past experience as well as external factors, such as anticipated impediments, obstacles, resources and opportunities that may influence the performance of the behavior (Ajzen, 1991).

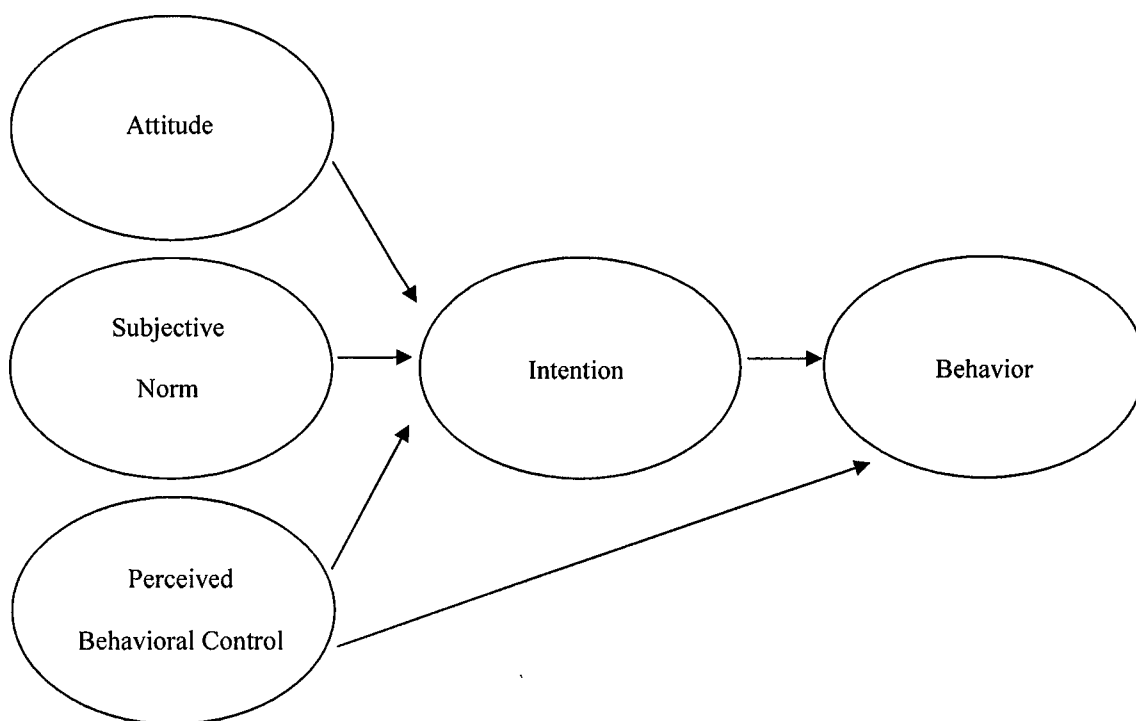


Figure 1: The Theory of Planned Behavior (Ajzen, 1985).

According to the TPB, attitudes and subjective norm exert their influence toward a specific behavior through their impact on intentions (Ajzen & Madden, 1986).

However, perceived behavioral control may influence both intention to perform the behavior and actual behavior (Ajzen & Madden, 1986). The model predicts that the more favorable the attitude and subjective norm, and the greater the perceived control over the behavior, the stronger the person's intention to perform the behavior should be (Ajzen, 2006). If individuals have a sufficient amount of actual control over the behavior, they are expected to carry out their intentions when the opportunity arises (Ajzen, 2006).

Moderating Variables of the Theory of Planned Behavior

A number of variables may influence the association between TPB constructs and behavior (Bozionelos & Bennett, 1999). One major variable that has been found to moderate the effects of TPB constructs is past behavior. Research suggests that past behavior moderates the effects of PBC on future behavior, through the creation of a sense of control over performance of the behavior (Ajzen, 1988). Bozionelos & Bennett (1999) found that previous behavior explained 42 percent of the variance in intentions to exercise. Therefore, it is important to control for past behavior, in order to obtain more accurate measures of variance in behavior and behavioral intentions independently accounted for by TPB constructs.

Purpose of this Study

The Total Wellness health promotion program at Texas State seeks to improve the health of the university through the promotion of physical exercise. However, this program has achieved a marginal impact on the Texas State population due to low participation rates. The purpose of this study was to apply the Theory of Planned

Behavior to the target population of the Total Wellness health promotion program, Texas State faculty and staff, while controlling for past exercise behavior in order to:

1. Identify perceived barriers specific to participation in the Texas State Total Wellness program among university faculty and staff.
2. Identify perceived barriers to general physical exercise participation among Texas State faculty and staff.
3. Determine the predictive validity of the Theory of Planned Behavior for intentions to participate in the Total Wellness program of Texas State faculty and staff.
4. Determine the predictive validity of the Theory of Planned Behavior for intentions to engage in general physical exercise of Texas State faculty and staff.
5. Develop a set of recommendations regarding current Total Wellness recruitment strategies and physical exercise promotion that take into account social-cognitive characteristics and perceived barriers to physical exercise of university faculty and staff, in order to improve program participation and the impact of this health promotion program.

In order to accomplish the above stated objectives, the Theory of Planned Behavior was used as a theoretical framework to create a survey instrument (see Appendix). To explore factors associated with general physical exercise, items about any form of physical exercise were included in the instrument. To investigate factors specifically associated with Total Wellness program participation, items particularly about Total

Wellness program components were also included in the instrument. All items, regardless of what subject they referred to (i.e., general physical exercise or Total Wellness participation), were identical in their design and format.

CHAPTER II

METHODOLOGY

Participants

Participants were 107 Texas State employees, 77.6% ($n = 83$) females and 22.4 % ($n = 24$) males. The mean age of female participants was 44.21 years ($SD = 11.30$) and 47.42 years ($SD = 13.84$) for males. Female participants had a mean BMI of 27.18 ($SD = 7.02$) and the mean BMI for males was 26.47 ($SD = 3.0$). No significant differences were found between females and males in age $t(103) = -1.16, p = .25$ (two-tailed), $d = .01$. In regards to differences in BMI between females and males, the Levene's test for equality of variances was found to be violated, $F(1, 91) = 8.48, p < .01$. Therefore, a t statistic not assuming homogeneity of variance was computed. No significant differences were found between females and males in BMI $t(82.61) = .68, p = .50$ (two-tailed), $d = .01$. The sample was 78.5 % Caucasian, 14.0 % Hispanic/Latino, 1.9 % African American, 4.7 % specified other or mixed racial heritage, and 0.9 % of participants did not specify. The education level completed ranged from 4.7 % high school graduates, 19.6 % with some college, 22.4 % college graduates, 52.3 % graduate level education, and 0.9 % did not specify. Participants with missing demographic data were not removed from analyses due to the limited sample size. Total Wellness (TW) participants included Texas State employees currently enrolled (Spring 2009) in the TW program. Non-TW participants

included university faculty and staff that had never participated in TW. Past-TW participants included faculty and staff who participated in TW in the past, but were not currently TW members. More than half (56.1 %, $n = 60$) of the sample had never participated in TW, 27.1 % ($n = 29$) were current TW participants, and 16.8 % ($n = 18$) had participated in the past.

Procedure

Volunteers were recruited from various Texas State departments, including, but not limited to the following buildings: the Jowers Center, J.C. Kellam, Albert B. Alkek Library, Flowers Hall, Roy F. Mitte, Taylor Murphy, McCoy Hall and the LBJ Student Center. Participants were recruited from a total of 17 different university departments/buildings with the goal of approaching a representative sample of the employee population at the university. The researcher personally communicated with administrative assistants from each department. The researcher explained that the participation of faculty or staff volunteers from their department was being requested for a study investigating the attitudes and barriers towards participation in the Total Wellness program. Administrative assistants were asked to distribute the survey to their department's faculty and staff interested in participating, and to instruct volunteers to return the completed survey to the researcher via university mail. No incentives were provided. The survey and consent form were enclosed in a manila envelope, pre-addressed to the researcher's campus office address. Departmental administrative assistants took one of two approaches to recruitment of study participants. Some sent an announcement via university email to their department's faculty and staff and had

volunteers contact them for the study materials. Other administrative assistants placed the manila envelope in each faculty and staff university mail boxes.

To recruit TW program participants, the researcher first sent an announcement via email regarding study participation to all current TW members and class instructors. Second, the researcher personally visited TW group exercise classes, recruited study participation before the classes began, briefly explained the purpose of the study and mailing back instructions, and provided survey materials to the instructor for those interested in participating to take. Lastly, the researcher placed survey materials in the TW instructor's main office, where they were asked to take survey materials to each class, and provide them to TW volunteers interested in participating in the study. Written informed consent was obtained from each participant. Participants were given the opportunity to receive a brief summary of the study results via email.

Instrument

The survey instrument consisted of 100 items divided into two parts. Part 1 consisted of quantitative items that assessed all TPB model constructs (attitude, subjective norm, PBC, and intention) and perceived barriers towards both participation in general physical exercise and participation in the TW program. In other words, this quantitative section included 14 items measuring attitude towards engagement in general physical exercise, 3 items measuring subjective norm towards engagement in general physical exercise, 4 items measuring PBC towards general physical exercise, 3 items measuring intentions to engage in general physical exercise and 5 items assessing barriers to engagement in general physical exercise. This section also included 14 items measuring attitude specifically towards participation in the TW program, 3 items

measuring subjective norm towards participation in the TW program, 4 items measuring PBC towards participation in the TW program, 3 items measuring intentions to participate in the TW program, and 15 items assessing barriers specifically towards participation in the TW program.

Part 2 consisted mainly of qualitative questions gathering information on demographic characteristics (e.g., age, sex, ethnicity, and income), past exercise behavior, TW program membership (e.g., current, past, or non-TW participants), and other items specific to the TW program (e.g., suggestions for TW program improvement).

Measures Pertaining to General Physical Exercise

The instrument began with a section designed to measure all TPB constructs and barriers towards general physical exercise. Instructions for this section read: “Each of the statements below describes how you may or may not feel about exercising 3 times a week, for the majority of this semester. Write a number using the response scale below for the following statements regarding the degree to which you agree or disagree with them.” The response scale ranged from strongly disagree (1) to strongly agree (7). To ensure the quality of participant responses, quality control items were randomly distributed throughout Section 1 of the instrument, such as “For quality control purposes, please write “6” in the blank space next to this item”.

Questionnaire items measuring the TPB constructs were based on Ajzen (2006) and Francis et al. (2004) recommendations. The behavior of interest, engagement in general physical exercise or Total Wellness program participation, was defined in terms of its Target, Action, Context, and Time (TACT) elements (Ajzen, 2006). To measure

Total Wellness program participation, items included “participate in a Total Wellness group physical exercise class at least 3 times a week for the majority of this semester”. In this statement, the action was to “participate in a Total Wellness group physical exercise class”. The target was “group physical exercise class”. The context was a “group physical exercise class at the Total Wellness program”. Lastly, the time was “3 times a week for the majority of this semester”. The frequency of physical exercise was defined as 3 times a week to comply with physical exercise recommendations set by the American College of Sports Medicine and the American Heart Association (2007) for adults ages 18-65 (refer to Appendix to view all items in questionnaire).

Attitude towards general physical exercise. The first construct measured in Part 1 of the instrument was attitude towards general physical exercise. This construct consisted of one root phrase and 15 attitude descriptions. The root phrase for the attitude items read: “I think that engaging in some form of physical exercise at least 3 times a week, for the majority of this semester is/would be”. This phrase was followed by 15 attitude descriptions, such that participants were asked to indicate how strongly they agreed or disagreed that engaging in some form of physical exercise was interesting, useless, un-enjoyable, good, important, valuable, boring, harmful, worthless, unpleasant, enjoyable, beneficial, unimportant or bad. Eight of these items were reverse scored to ensure that responses to negative attitude descriptors were consistent with responses to positive attitude descriptors. Cronbach’s alpha coefficient (α) for scores on this scale was .89.

Perceived behavioral control towards general physical exercise. The second construct measured in Part 1 of the instrument was PBC towards general physical

exercise. This construct consisted of four items, two of which were reverse scored to ensure that higher responses on all items indicated stronger PBC. An example PBC item was, “I am confident that I could engage in some form of physical exercise at least 3 times a week, for the majority of this semester”. An example PBC item that was reverse scored was, “Even if I really want to, there are a number of factors that impede me from exercising at least 3 times a week, for the majority of this semester.” Participants were asked to indicate how strongly they agreed or disagreed with these statements. The α for scores on this scale was .83.

Barriers towards general physical exercise. The third construct measured in Part 1 of the instrument was barriers towards engaging in general physical exercise identified through review of the literature. There were a total of 5 barrier items. Barrier items consisted of the root phrase: “I don’t/wouldn’t engage in some form of physical exercise at least 3 times a week, for the majority of this semester because”. This phrase was followed by the barrier statements. An example barrier statement is “it is too expensive”. The α for scores on this scale was .51

Intention to engage in general physical exercise. The fourth construct measured in Part 1 of the instrument was intention to engage in general physical exercise. This construct was measured by the following three items, “I want to”, “I intend to”, and “I expect to engage in some form of physical exercise at least 3 times a week, for the majority of this semester”. The α for scores on this scale was .88.

Subjective norm regarding general physical exercise. The fifth construct measured in Part 1 of the instrument was subjective norm regarding general physical exercise. This construct was measured by three items, such as, “Most people who are

important to me think that I should engage in some form of physical exercise at least 3 times a week, for the majority of this semester”. The α for scores on this scale was .66.

Measures Pertaining to Total Wellness Program Participation

The instrument then proceeded with items designed to measure all TPB constructs pertaining specifically towards participation in the TW program and barriers specifically towards participation in the TW program. These items followed the same format as the items created to address engagement in general physical exercise, except that they were rephrased to address participation in the TW program instead. The TW program was briefly described and instructions were given as follows:

The following questions are specific to the *Total Wellness* group exercise program offered by our university. The *Total Wellness* program seeks to promote physical fitness among Texas State employees. The program offers a variety of group physical exercise classes during the lunch hour and after the work day at the Jowers building. *Total Wellness* program membership is available every academic semester for a monetary fee and includes unlimited access to any of the weekly group exercise classes, a health consultation at the start and end of the semester, weekly motivational emails with fitness tips and healthy eating recipes, and the use of heart rate monitors during exercise classes. Group exercise classes offered by *Total Wellness* include aerobics, core work, functional resistance training targeting all major muscle groups, stretching to increase flexibility, Pilates, Yoga and weight lifting techniques. Each of the statements below describes how you may or may not feel about participating in a *Total Wellness* group physical exercise class 3 times a week, for the majority of this semester. Write a number using the response scale below for the following statements regarding the degree to which you agree or disagree with them.

The same response scale as previously indicated was used for the items pertaining to TW program participation. Hence, the response scale ranged from strongly disagree (1) to strongly agree (7).

Attitude towards Total Wellness Program participation. The 6th construct measured in Part 1 of the instrument was attitude towards participation in the TW program. This construct consisted of one root phrase and 15 attitude descriptions. The

root phrase for the attitude items read: “I think that participating in a *Total Wellness* group physical exercise class at least 3 times a week, for the majority of this semester is/would be”. This phrase was followed by 15 attitude descriptions (identical to the attitude descriptions provided for the items measuring attitude towards general physical exercise). Eight of these items were also reverse scored to ensure that responses to negative attitude descriptors were consistent with responses to positive attitude descriptors. The α for scores on this scale was .95.

Perceived behavioral control towards Total Wellness Program participation. The 7th construct measured in Part 1 of the instrument was the PBC towards Total Wellness program participation. This construct consisted of four items, two of which were reverse scored to ensure that responses to items measuring low PBC were consistent with responses to items measuring high PBC. An example item is “Whether I participate in a *Total Wellness* physical exercise class at least 3 times a week, for the majority of this semester is entirely up to me.” An example of a reverse scored item is “Even if I really want to, there are a number of factors that impede me from participating in a *Total Wellness* group physical exercise class at least 3 times a week, for the majority of this semester.” The α for scores on this scale was .84.

Barriers towards Total Wellness Program participation. The 8th construct measured in Part 1 of the instrument was barriers towards engaging in general physical exercise. A total of 15 items were used to measure barriers. Barrier items consisted of the root phrase: “I don’t/wouldn’t engage in some form of physical exercise at least 3 times a week, for the majority of this semester because”. This phrase was followed by 15

barriers. Examples of barrier items are “it is too expensive” and “the times in which the classes are offered do not fit my work schedule”. The α for scores on this scale was .80.

Intention to participate in the Total Wellness Program. The 9th construct measured in Part 1 of the instrument was intention to participate in the Total Wellness program. This construct was measured by three items such as, “I want to participate in a *Total Wellness* physical exercise class at least 3 times a week, for the majority of this semester”. The α for scores on this scale was .93.

Subjective norm regarding Total Wellness Program participation. The 10th, and final, construct measured in Part 1 of the instrument was subjective norm regarding participation in the Total Wellness program. This construct was measured by 3 items such as, “Most people who are important to me think that I should participate in a *Total Wellness* physical exercise class at least 3 times a week, for the majority of this semester.” The α for scores on this scale was .81.

Qualitative Questions

Part 2 of the instrument assessed demographic and health characteristics such as, the participant’s age, ethnicity, gender, education level, household income, university building of employment, health conditions, BMI, and past physical exercise behavior. Past physical exercise behavior was measured using a modified version of Kimiecik’s (1992) past exercise item: “What is the total number of exercise periods you managed during the past 3 weeks?” Section 2 also included items to identify TW membership status of research participants such as, “Have you ever personally participated in the Total Wellness group physical exercise program?” Additionally, this section included open-ended items regarding suggestions for program improvements, such as, “Are there

any other issues or comments that come to your mind when you think about participating in Total Wellness that could help us enhance the program?” and “Please tell us what things you like or dislike about the Total Wellness group exercise program. Please write whatever comes to your mind.” (See Appendix for a complete list of questions)

CHAPTER III

RESULTS

Constructs with Problematic Internal Consistency

In the current study, all scores on the measures were found to have good internal consistency (i.e. $\alpha > .70$), as recommended by Nunnally & Bernstein (1994), except for scores measuring the construct of barriers to general physical exercise, which resulted in a Cronbach's alpha coefficient (α) of .51 and scores on the measure of the subjective norm towards general physical exercise ($\alpha = .66$). The scores on the construct of barriers to general physical exercise showed low reliability perhaps because the items measured disparate reasons for not engaging in some form of physical exercise, ranging from expense, fatigue, exercise-related injury, lack of time, and not being physically capable to engage in general physical exercise, none of which are necessarily related to each other in any meaningful manner. Each individual item measuring barriers to general exercise was entered separately in subsequent regression analyses and therefore, treated as separate variables. Since scores on the measure of the subjective norm to general exercise approached the recommended Cronbach's alpha coefficient (Nunnally & Bernstein, 1994), it was included in further analyses as a composite score. Table 1 provides the details of the internal consistency reliability analyses for all measured variables in this study.

Table 1

Cronbach's Alphas for Measures Pertaining to Engagement in General Physical Exercise and for Participation in the Total Wellness Program

Variable	Number of Items		Cronbach's Alpha	
	General Physical	Total Wellness	General Physical	Total Wellness
	Exercise	Program	Exercise	Program
Attitude	14	14	.89	.95
Perceived Behavioral Control	4	4	.83	.84
Subjective Norm	3	3	.66	.81
Barriers	5	15	.51	.80
Intentions	3	3	.88	.93

Predicting Intent to Engage in General Physical Exercise

A hierarchical multiple regression analysis was conducted to determine the amount of variance in intention to engage in general physical exercise accounted for by attitudes toward general physical exercise, subjective norm towards general physical exercise, PBC towards general physical exercise, and each of the 5 individual barriers to general physical exercise, after taking into account the effects of past physical exercise behavior. In the first step, past physical exercise behavior was entered into the equation, producing an equation that was significantly predictive of intention to engage in general physical exercise, $R^2 = 0.09$, $F(1, 94) = 9.02$, $p < 0.01$. In the second step of the hierarchical regression model, the attitude towards general physical exercise, PBC

towards general physical exercise and subjective norm towards general physical exercise constructs, and the individual barrier items to general physical exercise were added (i.e., expensive, fatigue, exercise-related injury, lack of time and not physically capable). The second step also contributed significantly ($\Delta R^2 = .50$, $\Delta F(8, 86) = 13.29$, $p < 0.001$) to the prediction of intention to engage in general physical exercise, $R^2 = 0.59$, $F(9, 86) = 13.87$, $p < 0.001$. This model accounted for 59% of the variance in intention to engage in general physical exercise. However, after controlling for past physical exercise behavior, only attitude towards general physical exercise, PBC towards general physical exercise, and the specific barrier to exercise of not being physically capable to exercise significantly predicted intention to engage in general physical exercise (see Table 2). PBC towards general physical exercise made the largest unique contribution, such that PBC towards general physical exercise was positively associated with intention to exercise in general ($\beta = 0.50$, $p < 0.001$). Attitude towards general physical exercise was also positively associated with the intent to engage in the behavior ($\beta = 0.38$, $p < 0.001$). Lastly, the specific barrier to general exercise of not being physically capable of engaging in some form of physical exercise was negatively related to the intent to physically exercise in general ($\beta = -0.25$, $p < 0.01$). The effect sizes (squared semi-partial correlation) for these variables were .11, .09, and .04, respectively.

Table 2

Summary of Hierarchical Regression Analysis for Variables Predicting Intention to Engage in General Physical Exercise ($N = 96$)

Variable	F	ΔF	B	$SE\ B$	β	95 % C. I. for B		Effect Size
						Lower	Upper	
Step 1	9.02**	9.02**						
Total Exercise in Past 3 Weeks			0.04	0.02	0.30**	0.02	0.07	0.09
Step 2	13.87***	13.29***						
Total Exercise in Past 3 Weeks			0.00	0.01	0.03	-0.02	0.03	0.00
Attitude toward General P.E.			0.84	0.19	0.38***	0.46	1.21	0.09
PBC toward General P E.			0.45	0.09	0.50***	0.26	0.63	0.11
Subjective Norm toward General P E.			0.03	0.07	0.03	-0.11	0.17	0.00
Barrier 1 (Expensive)			-0.05	0.06	-0.06	-0.16	0.07	0.00
Barrier 2 (Fatigue)			0.06	0.10	0.05	-0.14	0.27	0.00
Barrier 3 (Exercise-Related Injury)			0.03	0.07	0.04	-0.10	0.16	0.00
Barrier 4 (Lack of Time)			0.06	0.06	0.10	-0.06	0.19	0.00

Table 2-Continued

Variable	<i>F</i>	ΔF	<i>B</i>	<i>SE B</i>	β	95 % C. I. for <i>B</i>		Effect Size
						Lower	Upper	
Barrier 5 (Not Physically Capable)			-0.25	0.09	-0.25**	-0.43	-0.07	0.04

Note: $R^2 = .09$ for Step 1; $\Delta R^2 = .50$ for Step 2 ($p < .001$); ** $p < .01$; *** $p < .001$

Predicting Intent to Participate in the Total Wellness Program

A separate hierarchical multiple regression analysis was conducted to determine the amount of variance in intention to participate in the Total Wellness (TW) program accounted for by attitude towards TW participation, subjective norm towards TW participation, PBC towards TW participation and the construct of overall barriers to TW participation, after taking into account the effects of past physical exercise behavior and the participant's TW membership status. The variable, Total Exercise in Past 3 Weeks, was used to measure past physical exercise behavior. Participant's TW membership status was identified through the use of two dummy variables. The variable Dummy 1 (TW Participation, Past or Current), assigned a value of 0 to non-TW participants, and a value of 1 to both current-TW and past-TW participants. The variable Dummy 2 (Current TW Participation), classified non-TW and past-TW participants as 0 and assigned a value of 1 to current-TW participants. In the first step, the past physical exercise behavior variable was entered into the equation. Past physical exercise behavior did not significantly predict intention to participate in the TW program. In the second step of the hierarchical regression model, adding the variables, Dummy 1 (TW Participation, Past or Current) and Dummy 2 (Current TW Participation), to the regression also did not significantly contribute to the equation. In the third step of the hierarchical regression model, the constructs, attitude towards TW participation, PBC towards TW participation, subjective norm towards TW participation and overall barriers to TW participation were added. The third step contributed significantly ($\Delta R^2 = .52$, $\Delta F(4, 86) = 26.53$, $p < 0.001$) to the prediction of intention to participate in the TW program, $R^2 = 0.58$, $F(7, 86) = 17.01$, $p < 0.001$. This model accounted for 58.1% of the variance in intention to

participate in the TW program. However, after controlling for past physical exercise behavior and TW membership status, only the attitude towards TW participation construct and the construct of overall barriers to TW participation significantly predicted intention to participate in the TW program (see Table 3). The overall barriers to TW participation construct made the largest unique contribution, such that the construct of overall barriers to TW participation was positively associated with intention to exercise in general ($\beta = 0.80, p < 0.001$). Similarly, a positive, but weaker relationship between attitude towards TW participation and intention to participate in the TW program was observed ($\beta = 0.27, p < 0.01$). The effect size for these two significant predictors were .31 and .06, respectively.

Table 3

Summary of Hierarchical Regression Analysis for Variables Predicting Intention to Participate in the Total Wellness (TW) Program ($N = 94$)

Variable	F	ΔF	B	$SE B$	β	95 % C. I. for B		Effect Size
						Lower	Upper	
Step 1	0.33	0.33						
Total Exercise in Past 3 Weeks			-0.01	0.15	-0.06	-0.32	0.02	0.00
Step 2	2.03	2.87						
Total Exercise in Past 3 Weeks			-0.00	0.01	0.00	-0.03	0.02	0.00
Dummy 1 (TW Participation, Past or Current)			0.33	0.32	0.16	-0.31	0.98	0.01
Dummy 2 (Current TW Participation)			-0.78	0.36	-0.34*	-1.49	-0.08	0.05
Step 3	17.01***	26.53***						
Total Exercise in Past 3 Weeks			-0.00	0.01	0.00	-0.02	0.01	0.00
Dummy 1 (TW Participation, Past or Current)			0.28	0.23	0.13	-0.17	0.73	0.01
Dummy 2 (Current TW Participation)			0.12	0.27	0.05	-0.42	0.65	0.00
Attitude toward TW Program Participation			0.30	0.09	0.27**	0.12	0.47	0.06

Table 3-Continued

Variable	<i>F</i>	ΔF	<i>B</i>	<i>SE B</i>	β	95 % C. I. for <i>B</i>		Effect Size
						Lower	Upper	
PBC toward TW Program Participation			-0.05	0.06	-0.08	-0.17	0.07	0.00
Subjective Norm toward TW Program Participation			0.01	0.05	0.01	-0.10	0.11	0.00
Barriers (construct) to TW Program Participation			0.95	0.12	0.80***	0.71	1.18	0.31

Note: $R^2 = .00$ for Step 1; $\Delta R^2 = .06$ for Step 2 ($p > .05$), $\Delta R^2 = .52$ for Step 3 ($p < .001$); * $p < .05$; ** $p < .01$, *** $p < .001$

Group Differences for Engagement in General Physical Exercise

A one-way between-groups analysis of variance was conducted to explore the impact of TW membership status on attitude towards general exercise, PBC towards general exercise, subjective norm towards general exercise and intentions to engage in general physical exercise. Subjects were divided into three groups according to their TW membership status (Group 0: never participated in TW program, Group 1: current TW member, Group 2: past TW participant, but not current TW member). For those analyses in which heterogeneity of variance in the groups was present, Dunnett's C correction to the calculation of the F-score was applied. For those significant differences between the three groups via a significant omnibus F-score, Dunnett's C provides confidence intervals for the interpretation of statistical significance.

The Levene's test for homogeneity of variances was significant for subjective norm ($F(2, 104) = 5.27, p < .01$) and intentions ($F(2, 104) = 6.78, p < .01$), indicating unequal variance between groups. There was a statistically significant difference between groups in subjective norm towards general physical exercise ($F(2, 104) = 3.13, p < .05, \eta^2 = .06$) and intentions to engage in general physical exercise ($F(2, 104) = 4.03, p < .05, \eta^2 = .07$), both with a small effect size.

Post-hoc paired comparisons of the three groups indicated that the subjective norm towards general physical exercise mean score for the non-TW group ($M = 4.04, SD = 1.21$) was significantly different from the past-TW group ($M = 4.91, SD = .80$), with the non-TW group reporting a lower level of subjective norm towards general physical exercise. Additionally, a statistically significant difference in intention to engage in general physical exercise was found between non-TW participants ($M = 5.77, SD = 1.52$)

and current-TW participants ($M = 6.56$, $SD = .68$), such that current TW participants reported higher intentions to participate in general physical exercise than non-TW participants.

Group Differences Related to Participation in the Total Wellness Program

A one-way between-groups analysis of variance was conducted to explore the impact of TW membership status on the variables of attitude towards TW program participation, PBC towards TW program participation, subjective norm towards TW program participation, and intention to participate in the TW program. For those analyses in which heterogeneity of variance in the groups was present, Dunnett's C correction to the calculation of the F-score was applied. For those significant differences between the three groups via a significant omnibus F-score, Dunnett's C provides confidence intervals for the interpretation of statistical significance.

The Levene's test for homogeneity of variances was significant for attitude towards TW program participation ($F(2, 102) = 8.43$, $p < .001$), indicating unequal variance between groups. ANOVA results indicated that there was a statistically significant difference between groups in attitude towards TW program participation ($F(2, 102) = 9.79$, $p < .001$, $\eta^2 = .16$), perceived behavioral control towards TW program participation ($F(2, 101) = 10.87$, $p < .001$, $\eta^2 = .18$) and subjective norm towards TW program participation ($F(2, 102) = 7.41$, $p < .01$, $\eta^2 = .13$), with all effect sizes ranging from medium to large.

Post-hoc paired comparisons of the three groups indicated that the attitude towards TW program participation mean score for the non-TW group ($M = 5.68$, $SD = 1.06$) differed significantly from the current TW group ($M = 6.55$, $SD = .40$), such that

current TW participants endorsed more favorable attitudes toward TW program participation than did non-TW participants. In regards to PBC towards TW program participation mean scores, the current TW group ($M = 5.19$, $SD = 1.53$) also significantly differed from both the non-TW group ($M = 3.66$, $SD = 1.54$) and past-TW group ($M = 3.64$, $SD = 1.33$). Current TW participants expressed higher levels of perceived behavioral control than both non- and past-TW participants. Additionally, statistically significant group mean differences in subjective norm towards TW program participation were found between the current TW group ($M = 4.14$, $SD = 1.64$) and non-TW group ($M = 2.83$, $SD = 1.48$), such that current TW participants reported stronger subjective norm than non-TW participants.

Group Differences in Perceived Barriers to Engagement in General Physical Exercise

A one-way between-groups analysis of variance was conducted to explore the impact of TW membership status on the five individual barrier items pertaining to engagement in general physical exercise. There were no statistically significant differences in mean scores between the groups for the overall barrier construct or for any of the barrier items pertaining to engagement in general physical exercise.

Group Differences in Perceived Barriers to Participation in the Total Wellness Program

A one-way between-groups analysis of variance was conducted to explore the impact of TW membership status on the overall barrier construct, and the fifteen individual barrier items specific to TW program participation. For those analyses in which heterogeneity of variance in the groups was present, Dunnett's C correction to the calculation of the F-score was applied. For those significant differences between the three

groups via a significant omnibus F-score, Dunnett's C provides confidence intervals for the interpretation of statistical significance.

The Levene's test for homogeneity of variances was significant for the individual barrier items "classes don't meet my needs" ($F(2, 100) = 9.44, p < .001$), "don't like to exercise with co-workers" ($F(2, 101) = 12.42, p < .001$), "don't like to exercise with others" ($F(2, 101) = 12.48, p < .001$), and "classes are too long" ($F(2, 100) = 6.00, p < .01$), indicating unequal variance between groups. ANOVA results indicated that there was a statistically significant difference between groups for the overall barrier construct ($F(2, 102) = 19.90, p < .001, \eta^2 = .28$), the individual barrier items specific to TW program participation: "don't have enough time" ($F(2, 100) = 3.19, p < .05, \eta^2 = .06$), "classes don't meet my needs" ($F(2, 100) = 5.33, p < .01, \eta^2 = .10$), "class times don't fit my schedule" ($F(2, 100) = 11.77, p < .001, \eta^2 = .19$), "don't like to exercise with co-workers" ($F(2, 101) = 18.86, p < .001, \eta^2 = .27$), "classes are too large" ($F(2, 100) = 35.58, p < .001, \eta^2 = .42$), "don't like to exercise with others" ($F(2, 101) = 18.74, p < .001, \eta^2 = .27$), "classes are too long" ($F(2, 100) = 19.68, p < .001, \eta^2 = .28$), and "I'm too busy" ($F(2, 102) = 5.94, p < .01, \eta^2 = .10$), with all effect sizes ranging from medium to large.

Post-hoc paired comparisons of the three groups were used to identify statistically significant mean differences in perceived barriers to TW program participation between groups. In regards to the overall barrier construct to TW program participation, results indicate that the mean score of the current-TW group was significantly lower than both the non-TW and past-TW group means (see Table 4 below for *M* and *SD*).

For the barrier item, “don’t have enough time”, the mean score of the non-TW group was significantly greater than the current-TW group mean (see Table 4 below for *M* and *SD* of all significant barrier items). For the barrier item, “TW classes don’t meet my needs”, the mean score of the non-TW group was significantly greater than the current-TW group mean. For the barrier item, “class times don’t fit my schedule”, the mean score of the current-TW group was significantly lower than both the non-TW and past-TW group means. For the barrier item, “too busy”, the mean score of the current-TW group was significantly lower than both the non-TW and past-TW group means. For the barrier item, “don’t like to exercise with co-workers”, the mean score of the non-TW group was significantly greater than the mean scores of both the current-TW and past-TW groups. For the barrier item, “classes are too large”, the mean score of the current-TW group was significantly lower than both the non-TW and past-TW group means. For the barrier item, “don’t like to exercise with others”, the mean score of the non-TW group was significantly greater than the mean scores of both the current-TW and past-TW groups. For the barrier item, “classes are too long”, the mean score of the non-TW group was significantly greater than both the current-TW and past-TW group means.

Table 4

Means and Standard Deviations for Perceived Barriers to Total Wellness (TW) Program Participation by TW Group

Barrier to TW Participation	TW Group					
	Non-TW		Current TW		Past-TW	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Overall Barrier Construct	3.38 _a	0.80	2.27 _{a,b}	0.73	3.31 _b	0.90
Barrier Item: Time	4.56 _a	2.06	3.41 _a	2.04	4.53	2.10
Barrier Item: Classes Don't Meet Needs	3.15 _a	1.73	2.00 _a	1.10	2.73	1.58
Barrier Item: Class Times Don't Fit Schedule	4.68 _a	1.85	3.03 _{a,b}	1.94	5.47 _b	1.06
Barrier Item: Too Busy	5.00 _a	1.97	3.79 _{a,b}	1.95	5.65 _b	1.66
Barrier Item: Don't Like Exercise with Co-Workers	3.80 _{a,b}	1.90	1.62 _a	0.86	2.31 _b	1.58
Barrier Item: Classes are Too Large	3.71 _a	1.19	1.62 _{a,b}	0.73	2.88 _b	1.26
Barrier Item: Don't Like Exercise with Others	3.69 _{a,b}	1.79	1.59 _a	0.73	2.38 _b	1.75
Barrier Item: Classes Too Long	3.26 _{a,b}	1.31	1.62 _a	0.94	2.38 _b	0.96

Note: Means in the same row that share subscripts differ significantly at $p < .05$

Components Liked about the Total Wellness Program

Current-TW group. Approximately 93.1% ($n = 27$) of the current-TW group participants provided feedback about the things they liked about the TW program. In regards to the group exercise classes, this sub-sample of the TW-group liked the variety of classes offered, particularly the Fusion and Yoga classes, and having different class options on different days. Additionally, they found the class time and length as optimal, particularly classes held during the lunch hour. In regards to the instructors, this group viewed the staff as very talented and believed the instructors were genuinely interested in their health improvement, noting that instructors took time to explain techniques and to

provide help. Current-TW participants also enjoyed the group dynamic provided by the TW program, commenting that it provided a comfortable atmosphere. They liked the variety of ages of class members and the relationships built through this program. This group also viewed the TW program as challenging, fun, effective for the maintenance of weight and for the relief of stress.

Past-TW group. About 66.67 % ($n = 12$) of the past-TW group shared the things they liked about the TW program. Past-TW participants were very fond of the Yoga class. They also expressed that the instructors had excellent teaching skills and were very enthusiastic, particularly the Yoga instructors. This program provided a supportive atmosphere, a sense of accomplishment, and a boost of energy for this group.

Non-TW group. Only 6.67% ($n = 4$) of the non-TW group shared the things they liked about the TW program. They noted that the idea of becoming physically healthy at work is appealing and convenient. One individual liked the lockers and laundry service available at the facility. They also liked that Texas State is promoting the importance of physical exercise through this program.

Components Disliked about the Total Wellness Program

Current-TW group. Approximately 72.41 % ($n = 21$) of the current-TW group provided responses regarding their dislikes about the TW program. In regards to the class instructors, current-TW members were concerned about the variability in expertise level of the instructors, expressing that incoming instructors had difficulty staying on beat with the music in comparison to more experienced instructors. However, current-TW participants also expressed that some, more experienced instructors, taught at a much

faster pace, providing numerous exercise combinations to follow at a time, making it difficult for beginner participants to keep up. This inconsistency in teaching level and in the degree of difficulty of the exercise classes was a problem for the current-TW group. Another concern was related to the time the evening TW exercise classes begin, 5:15 p.m. Current-TW participants expressed difficulty in getting to evening classes on time due to limited parking and rush hour traffic. This group would prefer that evening classes begin at 5:30 p.m. and they would also like the option of morning classes. In regards to the classes, it was noted that some classes do not begin on time, that limited equipment and space are available, and that the facility, specifically the gym floor, was dirty.

Past-TW group. More than half (61.11 %, $n = 11$) of the past-TW group shared the things they disliked about the TW program. Similarly to the current-TW group, past-TW respondents also disliked the evening class times, noting that they begin too soon after 5 p.m. This also makes it difficult for the past-TW group to arrive on time. Noon classes are disliked by this group because they don't perceive having enough time to get to class, work out, shower, and return to work. They also disliked that morning classes are unavailable. In regards to the instructors, this group expressed that some instructors advanced too quickly in the techniques they taught, that there wasn't enough variety in the exercise routines taught, and that some instructors were less prepared than others. Additionally, this group did not like the size of the classes, noting that they were too large.

Non-TW group. Only 6.67 % ($n = 4$) of the non-TW group shared their dislikes about the TW program. Non-TW respondents disliked exercising in groups, believed there wasn't enough time to attend the class, shower and return to work, and thought the

membership was too expensive.

User Suggestions for Changes in the Program

Past-TW group. Non-TW and past-TW groups were asked, “What changes need to be introduced to the TW program in order for you to participate?” Past-TW group responses (50 %, $n = 9$) ranged from making morning exercise classes available, offering later evening classes, providing better parking near work buildings, offering classes in other buildings like the LBJ Student Center and reducing the membership fee.

Additionally, respondents suggested that the 30 minutes of wellness time offered to Texas State employees be applicable to the beginning, end or lunch time of the day. This group also suggested that instructors be consistent in their degree of difficulty of physical exercise routines. Lastly, past-TW respondents suggested that greater support from the department in which they work would facilitate TW-program participation.

Non-TW group. Only one (1.67 %) non-TW participant provided a response to this question, suggesting that morning classes be available.

CHAPTER IV

DISCUSSION

Predicting Intent to Engage in General Physical Exercise

In accordance with the Theory of Planned Behavior, after controlling for past physical exercise behavior, participants in this research study with a more favorable attitude towards engaging in general physical exercise and with greater perceived behavioral control towards general physical exercise expressed greater intentions to engage in physical exercise in general. Additionally, individuals who believed they were physically incapable of engaging in general physical exercise reported lower intentions to exercise in general. Subjective norm toward general physical exercise did not predict intention to engage in general physical exercise. These results are consistent with previous findings, however, since subjective norm has not been a strong predictor of intention or behavior in the physical activity context (Downs & Hausenblas, 2005). Lastly, the remaining four barrier items to general physical exercise related specifically to its expense, the fatigue produced by exercise, having an exercise-related injury, and the perceived lack of time to exercise did not influence an individual's intention to engage in general physical exercise. For example, even though individuals believe they don't have spare time to dedicate to general physical exercise, if they strongly believe they are physically capable of doing it, then they form intentions to enact the behavior. One might postulate that these latter four barrier items may be more strongly related to the actual

enactment of the behavior than to intentions. However, this study did not find differences between the three groups (i.e. those who had never participated in the TW program, past TW program participants, and current TW program participants) related to barriers to general physical exercise, suggesting that these four individual barriers are unrelated to both intentions and the behavior. Intentions to engage in any form of physical exercise of Texas State faculty and staff, according to results of this study, seem to be primarily influenced by the individual's sense of control over the behavior, especially the component of physical capability, and to a lesser extent, by the individual's attitude towards general physical exercise.

Predicting Intent to Participate in the Total Wellness Program

After controlling for past physical exercise behavior and TW program membership status, greater intent to participate in the TW program was observed among research participants with a more positive attitude towards TW program participation, consistent with the TPB. PBC towards TW participation and subjective norm towards TW participation did not predict intention to participate in the TW program, however. As previously mentioned, the subjective norm construct has not been a strong predictor of intention to exercise in previous physical exercise research (Downs & Hausenblas, 2005). PBC was unrelated to intention to participate in the TW program perhaps because regardless of whether or not individuals believed they could participate in the program, their intention to actually participate was more related to their preferred method of physical exercise, and to whether the TW group classes matched this preference.

The construct measuring overall barriers to TW participation was positively associated with intent to participate in the program, such that greater endorsement of

barriers to TW participation resulted in a greater intention to participate in the TW program. This finding contradicts the prediction of the TPB; that individuals who perceive fewer barriers to and greater control over the performance of a behavior will display greater intentions to enact the behavior. However, on average, research participants in this study felt indifferent about the barriers to participation in the TW program, evidenced by their frequent “neither agree nor disagree” response to the barrier to TW participation items. Additionally, past, current, and non-TW groups did not differ in their intentions to participate in the program, all having relatively low intentions to participate. But again, individuals with greater overall barriers to participation in the TW program expressed relatively greater intent to participate in the program. Current-TW participants perceived greater control and fewer barriers to participating in the program (PBC towards TW), while non- and past-TW groups perceived less control and more barriers to participation in the TW program (PBC towards TW). These findings suggest that the majority of research participants were not informed enough about the TW program in order to take a meaningful stand in agreement or disagreement about overall barriers to TW program participation. Perhaps those who did agree that the barrier items made participation in the TW program difficult represented individuals who were aware of and informed enough about the components of the TW program (e.g. current-TW participants) to actually endorse or reject the barrier statements. If in fact individuals with lower overall barriers to participation in the TW program represent current-TW participants, it makes sense that they expressed weaker intentions to participate in the program, since they are already in the volitional phase (Schwarzer, 1992) of health behavior change (by participating in the TW program) and therefore, no longer merely

intend to participate in the program. This idea is further supported by the differences in PBC between the TW groups which showed that current-TW participants have greater PBC (i.e. fewer perceived barriers) to TW program participation than both past- and non-TW groups.

In summary, although individuals may strongly perceive real barriers overall to participation in the TW program, they also overall viewed the TW program in a favorable manner, evidenced by their agreement that the program is valuable, interesting, enjoyable or beneficial, among other attitude descriptors. This stronger positive attitude towards the TW program seems to attenuate the negative effect that barriers would typically have on one's intention to perform a behavior, resulting in an overall greater intent to participate in the TW program.

Group Differences for Variables in the General Physical Exercise Model

Attitude. There were no differences between TW groups in attitude towards general physical exercise. All participants expressed a favorable attitude towards general physical exercise.

Perceived behavioral control. There were no differences between TW groups in PBC towards general physical exercise. All participants held moderately strong perceptions of control over general physical exercise.

Subjective norm. The past TW-group expressed greater subjective norm toward general physical exercise than the non-TW group. However, no other differences between groups were found pertaining to subjective norm toward general physical exercise.

Perceived barriers. No differences between TW groups were found in regards to perceived barriers to engaging in general physical exercise. These results coincide with

the lack of observed differences in PBC towards general physical exercise between the groups, since the PBC construct measures, not only the perceived likelihood of encountering factors that will facilitate successful performance of a behavior, but also those that will inhibit its enactment (Ajzen, 1991).

Intention. The current-TW group expressed greater intent to participate in general physical exercise than non-TW participants, understandably so since all current-TW participants were already formally engaging in physical exercise through the program. Membership to a physical exercise program, like TW, could be associated with some level of commitment due to the investment associated with the purchase of a membership.

Group Differences for Variables in the Total Wellness Program Model

Attitude. In comparison to the non-TW group, current-TW participants expressed a more favorable attitude towards participation in the TW program. This finding is understandable, since the current-TW group was taking part in the program.

Perceived behavioral control. In comparison to the non-TW group, current-TW participants expressed stronger PBC towards participation in the TW program. This finding is understandable, since the current-TW group was taking part in the program. Additionally, the current-TW group expressed stronger PBC towards participation in the TW program than past-TW participants. The net amount of PBC towards participation in the TW program of the past-TW group may be lower than that of current-TW participants due to past participants' failed attempt to continue the behavior and its associated disappointment (Dunn, Andersen & Jakicic, 1998). It could also be due to newly identified barriers to TW program adherence or a combination of the two.

Subjective norm. In comparison to the non-TW group, current-TW participants expressed greater subjective norm towards participation in the TW program. This finding is understandable, since the current-TW group was taking part in the program.

Perceived barriers. In comparison to current TW participants, both non-TW and past-TW groups perceived more barriers overall to participation in the TW program, as measured by the overall barrier construct. This is reasonably so since the TW-group is already taking part in the program. This finding is also in line with the more favorable attitude towards TW program participation and greater PBC towards TW participation expressed by the current-TW group, relative to non- and past-TW groups.

In comparison to current-TW members, the non-TW group more strongly perceived the following items as barriers to participation in the TW program: “I don’t have enough time”, “the exercise classes offered by the TW program do not meet my needs”, “the times in which the classes are offered do not meet my work schedule”, “I don’t like to exercise with others nor with co-workers”, “the TW classes are too large and too long in duration”, and “I am too busy during the day to take time off to exercise”.

Similarly, when compared to current-TW participants, the past-TW group more strongly perceive that the times in which the TW classes are offered do not meet their work schedule, the TW classes are too large, and that they are too busy during the day to take time off to participate in the TW program.

Lastly, in comparison to the past-TW group, the non-TW group more strongly viewed exercising with co-workers or other people in general, and being too busy during the day as barriers to participation in the TW program.

Intention. In regards to intentions to participate in the TW program, no differences were found between TW groups. All groups expressed low intentions to participate. If we assume that current-TW members are participating in the program fairly regularly, (they are in the volitional phase of the health behavior change process outlined by the Health Action Process Approach; Schwarzer, 1992) then their intentions have already been translated into action, and the low intentions to participate in the program are justifiable. Furthermore, this group of current-TW participants may have reached a point in which participating in the TW program is under the control of automatic processes, or habits (Ajzen, 2001) and intent is no longer a conscious step in the enactment of this particular behavior. Past-TW participants' low intentions to participate in the TW program may be due to their failed attempt to maintain the behavior for a long term (Dishman, 1991; Sniehotta, Scholz & Schwarzer, 2005) or their perceived lack of desired results (Dunn, Andersen & Jakicic, 1998). Additionally, the barriers identified through this study may be actual barriers to participation for this group, further minimizing their intentions to participate in the TW program. This failure to maintain the behavior may have weakened their PBC towards further participation in the TW program (as shown by their lower PBC scores relative to current-TW members). This decrease in PBC towards participation in the TW program may maintain the intention to participate low, translating into further failure to participate in the program, ultimately creating a maladaptive cycle. Lastly, since this study found that attitude towards the TW program was positively associated with intent to participate in the program, the similarly low intention to participate in the TW program of the non-TW group may be explained by their less favorable attitude towards the program relative to the current- and past-TW groups.

Qualitative Information Regarding the Total Wellness Program

Components liked about the program. When asked what aspects of the TW program they liked, current -TW and past-TW participants both expressed that the teaching skills of instructors were excellent and that they showed a genuine interest in the health improvement of the TW members. Both groups also believed the classes provided a supportive and comfortable atmosphere that was both challenging and energy promoting. Lastly, both current- and past-TW participants particularly enjoyed the Yoga class. The non-TW group perceived the TW program as convenient and appealing.

Components disliked about the program. When asked what components of the TW program they disliked, both current- and past-TW participants disliked the variability in the teaching level from one instructor to another which consequently translated into varying degrees of difficulty in the group exercise classes. Additionally, current- and past-TW groups were opposed to the start time of the evening classes, preferring that they begin around 5:30 p.m. and they were also both in favor of morning classes. The past-TW group perceived the classes as being too large, while the non-TW group disliked group exercise entirely. The non-TW group also did not agree with the rate for TW membership.

User suggestions for changes in the program. When asked what changes needed to be introduced to the TW program in order for them to participate, past- and non-TW groups suggested that morning classes be made available. Some changes suggested by past-TW participants included shifting evening exercise classes to a later time, providing better parking, and offering classes closer to central campus. Lastly, non- and past-TW groups recommended that greater support and promotion of the TW program be expressed by the supervisors and leaders of the departments by offering incentives for

participation in the TW program, for example. This increase in perceived organizational support, or the extent to which employees believe the organization values their contribution and cares about their personal wellbeing (Eisenberger, Huntington, Hutchison & Sowa, 1986), may facilitate program participation.

Researcher Recommendations to Increase Total Wellness Program Participation

Based on quantitative and qualitative results of this study, Texas State faculty and staff were found to have overall favorable attitudes towards the TW program. Differences between past, current and non-TW participants were found in regards to the perceived barriers to participation in the TW program. Quantitative results indicate that the strongest perceived barriers to participation in the TW program were related to time. Individuals believed they didn't have enough time to participate in the program, believed the times in which the TW classes are offered do not fit their work schedule, and perceived themselves as being too busy during the day to take time off to exercise through TW classes. More specifically, qualitative results revealed that university faculty and staff have difficulty attending the TW evening exercise classes on time, due to traffic and limited parking, some don't perceive having enough time to attend noon classes, shower and return to work, and others would like the option of morning TW classes. Therefore, to address the time barrier, it is recommended that TW evening classes begin at or after 5:30 p.m. and that early morning exercise classes be made available. Also, it is recommended that short 15 minute classes, like the current Noon Express class, be made available during the morning, afternoon and evening class sessions. This will provide a short and effective work out session for individuals with limited time.

Quantitative results showed that Texas State faculty and staff also felt that the group exercise classes offered by the TW program did not meet their needs. Quantitative analyses further explored this problem and identified two main concerns. First of all, faculty and staff who have never participated in the program disliked exercising in groups entirely. Some individuals simply prefer to exercise alone, at home, or at a local gym, a preference in type of physical exercise that may be difficult to change, if at all. Second, past and current-TW participants both expressed that TW class instructors vary greatly in their teaching style, level of expertise, energy level and in the intensity level of the physical exercises taught. However, past and current-TW participants made many positive remarks about the instructors Sarah and Angela, and numerous individuals particularly liked the Yoga class instructors. Therefore, it is recommended that the outstanding qualities, teaching techniques and interpersonal skills of these excellent instructors and current Yoga instructors be identified and used as a model to enhance the teaching skills of current and future TW class instructors. An alternative approach would be to conduct instructor and group exercise class evaluations at the end of each semester, similar to evaluations currently conducted in the academic setting. This evaluation will allow TW participants to provide ongoing feedback and will help TW staff identify strengths and weaknesses in the program. Additionally, in order to reduce the variability in difficulty of the physical exercise performed, it is recommended that classes be separated according to beginner, intermediate and advanced physical activity level. This way, individuals can attend classes that fit their current fitness level and when they feel ready to increase the intensity level, they can attend a more advanced class.

Another barrier to TW participation identified through quantitative results is that some individuals perceive the TW classes are too large. If additional rooms are available in the Jowers Facility for TW group exercise classes, it is recommended that the classes be limited to a certain number of participants, depending on the size of the exercise room, and that additional exercise rooms be made available.

Lastly, the University Policy and Procedures Statement number 04.04.32 (Texas State, 2008) outlines the opportunity for regular university employees to participate in a voluntary wellness program utilizing educational and recreational facilities on the Texas State campus. Employees may receive thirty minutes per day paid release time to participate in approved wellness activities on the Texas State campus. Release time may not be accrued for future use, however and approval from the employee's immediate supervisor must be secured prior to participation. Lastly, the immediate supervisor may disapprove of participation if he/she determines that the employee's absence will negatively impact the office workflow. Since only thirty minutes per day are available for physical exercise participation, participating in the TW program isn't perceived as feasible or practical for most Texas State employees. Additionally, qualitative results of this study showed that university employees lacked support from their superiors in favor of physical exercise participation during the workday. It is recommended that supervisors be informed about the benefits that granting paid release time to their employees for physical exercise participation will bring to their department (i.e., improved job performance and increased work satisfaction). Perhaps this increased knowledge will promote support from supervisors in favor of employee participation in the TW program.

Persuasive communication is the favored strategy of behavioral change by supporters of the TPB (Ajzen, 2003). As shown by results of this study, the intentions to participate in the TW program of Texas State faculty and staff are low, regardless of whether they are currently participating in the program, have done so in the past, or have never participated in the program. Therefore, an intervention to increase intentions to participate in the TW program in the form of a persuasive message is recommended. According to hierarchical multiple regression results of this study, intentions of Texas State faculty and staff to participate in the TW program are influenced by an individual's attitude towards the program and perceived overall barriers to participating in the program. Therefore, all interventions designed to increase intentions to participate in the TW program (regardless of current, past, or no experience with the program) should target attitudes towards the program and provide alternative solutions to the perceived barriers to participation in the program (refer to previous recommendations). The attitudes of university faculty and staff towards the TW program, independent of TW program participation history, are strongly positive. Therefore, there is no need to change the attitudes of university faculty and staff.

It is recommended that the TW staff create a persuasive message in favor of participation in the TW program. The message should prompt message recipients to retrieve their preexisting positive attitudes towards the program and should provide solutions to the perceived barriers to participation in TW, such as those mentioned above. Additionally, this study found differences between past, current and non-TW groups in perceived barriers to TW participation. Therefore, it is recommended that the persuasive message be tailored according to the TW group that it is designed for, addressing

perceived barriers specific to each TW group (i.e., non-TW, past-TW, and non-TW participants). Essentially, three persuasive messages should be developed, each providing alternative solutions to the barriers specific to that TW group. Furthermore, differences in TPB constructs were found between non-, current-, and past-TW groups. It is recommended, therefore, that the persuasive messages also be tailored according to the differences in TPB constructs for each TW group.

Targeting non-TW participants. In order to promote participation in the TW program among Texas State faculty and staff who have never participated in the program, it is recommended that the persuasive message focus on both enhancing the attitudes toward TW program participation and strengthening the PBC towards TW participation of this group (since non-TW participants expressed the least favorable attitude towards TW and weakest PBC to TW participation in comparison to current-TW members). Additionally, it is recommended that the message provide the alternative solutions to all barrier items identified through this study (since this group perceived more overall barriers to TW participation in comparison to current-TW participants).

Targeting past-TW participants. To promote TW program participation among past-TW participants, the persuasive message should focus on increasing PBC towards TW participation (since this group expressed lower PBC towards TW participation than current-TW members). It is essential that the message provide alternative solutions such as the availability of morning classes, availability of evening classes beginning at 5:30 p.m., and smaller class options, since the barriers associated with these were more strongly endorsed by past-TW participants in comparison to current-TW members.

Targeting current-TW participants. Current-TW participants expressed greater subjective norm towards TW participation relative to non-TW participants. In order to promote adherence to the TW program, it is recommended that a message promoting continuous participation in the TW program incorporate statements such as, “Remember that engaging in physical exercise will bring a smile to the faces of those most important to you, your family and friends. Maintain and enhance your physical fitness by continuing your participation in the TW program!”

Limitations

As previously mentioned, the impact that an intervention has on the target population is determined by both assessments of its efficacy and the participation rate of the program (Velicer & DeClemente, 1993). Optimal health promotion program evaluations therefore, should address both of these components. One limitation of this study, however, is that it only evaluated the component of participation and therefore, provides an incomplete assessment of the impact factor. It is recommended, that future evaluation of the TW program address the efficacy of the program in achieving its goals.

Other limitations of this study were that the assumption of equal variances between groups was violated and that the sample sizes of each TW group were unequal. Therefore, Dunnett C adjustments to type one error were used to examine differences between groups and the results confirmed previously revealed patterns of differences between groups. However, replication of these findings is warranted.

The response rate for this study was approximately 33%. However, a precise rate is not available because of the variability in recruitment strategies used in the study. As previously mentioned, administrative assistants from various departments were spoken to

directly by the primary researcher, and some administrative assistants decided to send a mass email message to their department to recruit participants, others randomly placed research materials in faculty mail boxes, while others requested an exact number of research materials for each faculty member in their department. Additionally, multiple recruitment strategies were used for TW program participants. Therefore, an accurate response rate was not calculable. Future research studies should create a protocol for the recruitment strategy used, and should ensure that the protocol is followed throughout.

APPENDIX

SURVEY INSTRUMENT

Each of the statements below describes how you may or may not feel about exercising 3 times a week, for the majority of this semester. Write a number using the response scale below for the following statements regarding the degree to which you agree or disagree with them.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree Nor Disagree	Somewhat Agree	Agree	Strongly Agree

1. I think that engaging in some form of physical exercise at least 3 times a week, for the majority of this semester is/would be

- a. Interesting _____
- b. Useless _____
- c. Un-enjoyable _____
- d. Good _____
- e. For quality control purposes, please write "6" in the blank space next to this item _____
- f. Important _____
- g. Valuable _____
- h. Boring _____
- i. Harmful _____
- j. Worthless _____
- k. Unpleasant _____
- l. Enjoyable _____
- m. Beneficial _____
- n. Unimportant _____
- o. Bad _____

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree Nor Disagree	Somewhat Agree	Agree	Strongly Agree

-
2. Even if I really want to, there are a number of factors that impede me from exercising at least 3 times a week, for the majority of this semester _____
3. Whether I engage in some form of physical exercise at least 3 times a week, for the majority of this semester is entirely up to me ... _____
4. I am confident that I could engage in some form of physical exercise at least 3 times a week, for the majority of this semester..... _____
5. For quality control purposes, please write "2" in the blank space next to this item _____
6. For me to engage in some form of physical exercise at least 3 times a week, for the majority of this semester is/would be difficult _____
7. I don't/wouldn't engage in some form of physical exercise at least 3 times a week, for the majority of this semester because
- a. It is too expensive..... _____
- b. It makes me fatigued..... _____
- c. I have a previous exercise-related injury..... _____
- d. I don't have enough time _____
- e. I am not physically capable _____
8. I want to engage in some form of physical exercise at least 3 times a week, for the majority of this semester..... _____
9. I intend to engage in some form of physical exercise at least 3 times a week, for the majority of this semester..... _____
10. I expect to engage in some form of physical exercise at least 3 times a week, for the majority of this semester..... _____
11. Most people who are important to me think that I should engage in some form of physical exercise at least 3 times a week, for the majority of this semester... _____
12. My family and friends expect me to engage in some form of physical exercise at least 3 times a week, for the majority of this semester..... _____
13. I feel under social pressure to engage in some form of physical exercise at least 3 times a week, for the majority of this semester _____
-

The following questions are specific to the *Total Wellness* group exercise program offered by our university. The *Total Wellness* program seeks to promote physical fitness among Texas State employees. The program offers a variety of group physical exercise classes during the lunch hour and after the work day at the Jowers building. *Total Wellness* program membership is available every academic semester for a monetary fee and includes unlimited access to any of the weekly group exercise classes, a health consultation at the start and end of the semester, weekly motivational emails with fitness tips and healthy eating recipes, and the use of heart rate monitors during exercise classes. Group exercise classes offered by *Total Wellness* include aerobics, core work, functional resistance training targeting all major muscle groups, stretching to increase flexibility, Pilates, Yoga and weight lifting techniques. Each of the statements below describes how you may or may not feel about participating in a *Total Wellness* group physical exercise class 3 times a week, for the majority of this semester. Write a number using the response scale below for the following statements regarding the degree to which you agree or disagree with them.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree Nor Disagree	Somewhat Agree	Agree	Strongly Agree

14. I think that participating in a *Total Wellness* group physical exercise class at least 3 times a week, for the majority of this semester is/would be

- a. Interesting _____
- b. Useless _____
- c. Un-enjoyable _____
- d. Good _____
- e. For quality control purposes, please write "5" in the blank space next to this item _____
- f. Important _____
- g. Valuable _____
- h. Boring _____
- i. Harmful _____
- j. Worthless _____
- k. Unpleasant _____
- l. Enjoyable _____

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree Nor Disagree	Somewhat Agree	Agree	Strongly Agree

-
- m. Beneficial _____
- n. Unimportant _____
- o. Bad _____
15. Even if I really want to, there are a number of factors that impede me from participating in a *Total Wellness* group physical exercise class at least 3 times a week, for the majority of this semester _____
16. Whether I participate in a *Total Wellness* physical exercise class at least 3 times a week, for the majority of this semester is entirely up to me _____
17. I am confident that I could participate in a *Total Wellness* physical exercise class at least 3 times a week, for the majority of this semester..... _____
18. For me to participate in a *Total Wellness* physical exercise class at least 3 times a week, for the majority of this semester is/would be difficult.. _____
19. I don't/wouldn't participate in a *Total Wellness* physical exercise class at least 3 times a week, for the majority of this semester because
- a. It is too expensive _____
- b. It makes me fatigued. _____
- c. I have a previous exercise-related injury..... _____
- d. I don't have enough time _____
- e. To ensure the accuracy of your responses, please write "1" in the blank space next to this item _____
- f. I am not physically capable _____
- g. The classes offered do not meet my needs _____
- h. The times in which the classes are offered do not fit my work schedule..... _____
-

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree Nor Disagree	Somewhat Agree	Agree	Strongly Agree

i. I don't like to exercise with co-workers..... _____

j. The classes are too large. _____

k. I don't like to exercise with other people _____

l. I prefer to exercise in the morning, before my work day begins. _____

m. The classes are too long _____

n. I prefer to exercise outdoors..... _____

o. The classes are too difficult for me _____

p. I am too busy during the day to take time off to exercise .. _____

20. I want to participate in a *Total Wellness* physical exercise class at least 3 times a week, for the majority of this semester..... _____

21. I intend to participate in a *Total Wellness* physical exercise class at least 3 times a week, for the majority of this semester..... _____

22. I expect to participate in a *Total Wellness* physical exercise class at least 3 times a week, for the majority of this semester..... _____

23. Most people who are important to me think that I should participate in a *Total Wellness* physical exercise class at least 3 times a week, for the majority of this semester _____

24. My family and friends expect me to participate in a *Total Wellness* physical exercise class at least 3 times a week, for the majority of this semester _____

25. I feel under social pressure to participate in a *Total Wellness* physical exercise class at least 3 times a week, for the majority of this semester..... _____

You're almost finished! ☺ On the next pages you'll have an opportunity to provide some open-ended feedback. We appreciate your help.

Please answer each question below by filling in the blank space or marking the option that corresponds to you.

26. What is your age in years? _____

27. What is your ethnicity?

_____ Caucasian

_____ Hispanic/Latino

_____ African American

_____ Asian/Pacific Islander

_____ Other (explain) _____

28. Gender:

_____ Male

_____ Female

29. What is your highest level of education completed?

_____ Less than high school

_____ High school diploma

_____ GED completed

_____ Some college

_____ College graduate

_____ Graduate school: if so, what graduate degrees do you hold? _____

30. Your approximate annual household income _____

31. The university building/facility that you work in is. _____

32. Do you have any health condition(s) that may impede you from engaging in physical exercise?

_____ No

_____ Yes. If yes, please list the health condition(s):

33. What is your weight? _____ pounds

34. What is your height? _____ feet _____ inches

35. What is the total number of exercise periods you managed during the past 3 weeks? _____

36. Before you read the description on page 3, were you familiar with the *Total Wellness* group physical exercise program?

_____ No. *If NO, then you are finished with this survey! Thank you for your participation We really appreciate your help*

_____ Yes.

37. How did you find out about the *Total Wellness* program? _____

38. Did you know that *Total Wellness* also offers summer wellness programs for children and teens?

_____ No. *If NO, please skip to item 41*

_____ Yes.

39. Has your own child or teen ever participated in the summer wellness program for children and teens?

_____ No. *If NO, please skip to item 41 below*

_____ Yes.

40. What do you like or dislike about the summer wellness program for children and teens?

Things I like about the *summer* program _____

Things I dislike about the *summer* program: _____

41. Have you ever *personally* participated in the *Total Wellness* group physical exercise program?

_____ No. *If NO, please skip to item 47 below*

_____ Yes.

42. How long ago did you start and end your participation in *Total Wellness*? _____

43. Did you register for the *Total Wellness* program online?

_____ No. *If NO, skip to item 45 below*

_____ Yes.

44. What did you like or dislike about this online registration process?

Things I like about the *online registration* _____

Things I dislike about the *online registration*: _____

45. Are you currently a member of the *Total Wellness* group physical exercise program?

_____ Yes

_____ No. Please tell us what changes need to be introduced to the *Total Wellness* program in order for you to participate?

46. Please tell us what you like or dislike about the *Total Wellness* group exercise program. Please write whatever comes to your mind.

Things I like about *Total Wellness*.

Things I dislike about *Total Wellness*:

47. Are there any other issues or comments that come to your mind when you think about participating in *Total Wellness* that could help us enhance the program? _____

You are finished! Thank you for your participation. We really appreciate your help. ☺

REFERENCES

- Ajzen, I. (1985). From intentions to actions: A theory of planned behavior. In J. Kuhl & J. Beckmann (Eds.), *Action Control: From Cognition to Behavior* (pp. 11-39). New York, NY: Springer-Verlag.
- (1988). *Attitudes, personality, and behavior*. Chicago: Dorsey Press.
- (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50, 179-211.
- (2001). Nature and operation of attitudes. *Annual Review of Psychology*, 52, 27-58.
- (2003). Constructing a TPB questionnaire: Conceptual and methodological considerations. Retrieved November 5, 2008, from <http://people.umass.edu/aizen/pdf/tpb.measurement.pdf>
- (2006). Theory of planned behavior diagram. Retrieved November 5, 2008, from <http://people.umass.edu/aizen/tpb.diag.html#null-link>
- Ajzen, I., & Fishbein, M. (1980). *Understanding Attitudes and Predicting Social Behavior*. Englewood Cliffs, NJ: Prentice Hall.
- Ajzen, I., & Madden, T. J. (1986). Prediction of goal directed behavior: Attitudes, intentions, and perceived behavioral control. *Journal of Experimental Social Psychology*, 22, 453-474.
- American College of Sports Medicine (ACSM), & American Heart Association (AHA). (2007). Physical activity and public health guidelines frequently asked questions and fact sheet: Physical activity for the healthy adult. Retrieved December 29, 2008, from http://www.acsm.org/AM/Template.cfm?Section=Home_Page&Template=/CM/ContentDisplay.cfm&ContentID=7762
- Astrup, S. J., McGover, P. M., & Kochevar, L. K. (1992). The relationship between wellness participation and health care benefit utilization. *Benefits Quarterly*, 8(2), 41-54.

- Bozionelos, G., & Bennett, P. (1999). The theory of planned behaviour as predictor of exercise: The moderating influence of beliefs and personality variables. *Journal of Health Psychology*, 4, 517-529.
- Brenes, G. A., Strube, M. J., & Storandt, M. (1998). An application of the theory of planned behavior to exercise among older adults. *Journal of Applied Social Psychology*, 28(24), 2274-2290.
- Brickell, T. A., Chatzisarantis, N. L. D., & Pretty, G. M. (2006). Autonomy and control: augmenting the validity of the theory of planned behaviour in predicting exercise. *Journal of Health Psychology*, 11(1), 51-63.
- Buijs, R., Ross-Kerr, J., O'Brien Cousins, S., Wilson, D. (2003). Promoting participation: evaluation of a health promotion program for low income seniors. *Journal of Community Health Nursing*, 20(2), 93-107.
- Bungum, T. J., Orsak, K. C., & Chng, C. L. (1997). Factors affecting exercise adherence at a worksite wellness program. *American Journal of Health Behavior*, 21(1), 60-66.
- Center for Disease Control and Prevention (CDC). (2003). *Facts about chronic obstructive pulmonary disease*. Retrieved November 7, 2008, from <http://www.cdc.gov/nceh/airpollution/copd/copdfaq.htm>
- (2008). *U. S. Obesity Trends 1985-2007*. Retrieved October 31, 2008, from <http://www.cdc.gov/nccdphp/dnpa/obesity/trend/maps/>
- Daskapan, A., Tuzun, E. H., & Eker, L. (2006). Perceived barriers to physical activity in university students. *Journal of Sports Science and Medicine*, 5, 615-620.
- Dishman, R. K. (1991). Increasing and maintaining exercise and physical activity. *Behavior Therapy*, 22, 345-378.
- Dominick, K.L., & Morey, M. (2006). Adherence to physical activity. In Bosworth, H.B., Oddone, E.Z., & Weinberger, M. (Eds.), *Patient Treatment Adherence: Concepts, Interventions, and Measurement* (pp. 49-94). Mahwah: Lawrence Erlbaum Associates, Inc.
- Downs, D. S., & Hausenblas, H. A. (2005). The theories of reasoned action and planned behavior applied to exercise: A meta-analytic update. *Journal of Physical Activity and Health*, 2, 76-97.
- Dunn, A. L., Andersen, R. E., & Jakicic, J. M. (1998). Lifestyle physical activity interventions. History, short- and long-term effects, and recommendations. *American Journal of Preventive Medicine*, 15(4), 398-412.

- Eisenberger, R., Huntington, R., Hutchison, S., & Sowa, D. (1986). Perceived organizational support. *Journal of Applied Psychology*, 71, 500-507.
- Emery, C. F., Schein, R. L., Hauck, E. R., & MacIntyre, N. R. (1998). Psychological and cognitive outcomes of a randomized trial of exercise among patients with chronic obstructive pulmonary disease. *Health Psychology*, 17, 232-240.
- Emery, C. F., Shermer, R. L., Hauck, E. R., & Hsiao, E. T. (2003). Cognitive and psychological outcomes of exercise at 1-year follow-up study of patients with chronic obstructive pulmonary disease. *Health Psychology*, 22(6), 598-604.
- Fentem, P. H. (1994). Benefits of exercise in health and disease. *British Medical Journal*, 308, 1291-1295.
- Francis, J. J., Eccles, M. P., Johnston, M., Walker, A., Grimshaw, J., Foy, R., Kaner, E. F. S., Smith, L., & Bonetti, D. (2004). *Constructing questionnaires based on the theory of planned behavior: A manual for health services researchers* (Centre for Health Services Research ISBN 0-9540161-5-7). Newcastle, U. K.
- Fox, D. R. (1999). The influence of physical activity on mental well-being. *Public Health Nutrition*, 2(3a), 411-418.
- Grubbs, L., & Carter, J. (2002). The relationship of perceived benefits and barriers to reported exercise behaviors in college undergraduates. *Family Community Health*, 23(2), 76-84.
- Hagger, M. S., Chatzisarantis, N. L. D., & Biddle, S. J. H. (2003). A meta-analytic review of the theories of reasoned action and planned behavior in physical activity: Predictive validity and the contribution of additional variables. *Journal of Sport and Exercise Psychology*, 24, 3-32.
- Hall, P. A., Fong, G. T., Epp, L. J., & Elias, L. J. (2008). Executive function moderates the intention-behavior link for physical activity and dietary behavior. *Psychology and Health*, 23(3), 309-326.
- Hardeman, W., Johnston, M., Johnston, D., Bonetti, D., Wareham, N., Kinmonth, A. L. (2002). Application of the theory of planned behavior in behavior change interventions: A systematic review. *Psychology & Health*, 17(2), 123-158.
- Haskell, W. L., Lee, I., Pate, R. R., Powell, K., Blair, S. N., Franklin, B. A., Macera, C. A., Heath, G. W., Thompson, P. D., & Bauman, A. (2007). Physical activity and public health: Updated recommendation for adults from the American College of Sports Medicine and the American Heart Association. *Medicine & Science in Sports & Exercise*, 39(8), 1423-1434.

- Kahn, E. B., Ramsey, L. T., Brownson, R. C., Heath, G. W., Howze, E. H., Powell, K. E., Stone, E. J., Rajab, M. W., & Corso, P. (2002). The effectiveness of interventions to increase physical activity. A systematic review. *American Journal of Preventive Medicine*, 22(4), 73-107.
- Kimiecik, J. (1992). Predicting vigorous physical activity of corporate employees: Comparing the theories of reasoned action and planned behavior. *Journal of Sport and Exercise Psychology*, 14, 192-206.
- King, A. C., Castro, C., Wilcox, S., Eyler, A. A., Sallis, J. F., & Brownson, R. C. (2000). Personal and environmental factors associated with physical inactivity among different racial-ethnic groups of US middle-aged and older aged adults. *Health Psychology*, 19, 354-364.
- Kruger J., Carlson, S. A., & Kohl, H. W. (2007) Fitness facilities for adults differences in perceived access and usage. *American Journal of Preventive Medicine*, 32(6), 500-505
- Kruger, J., Yore, M. M., Bauer, D. R., Kohl, H. W. (2007). Selected barriers and incentives for worksite health promotion services and policies. *American Journal of Health Promotion*, 21(5), 439-447.
- Kwak, L., Kremers, S., Van Baak, M., & Brug, J. (2005). Participation rates in worksite based intervention studies: health promotion context as a crucial quality criterion. *Health Promotion International*, 21(1), 66-69.
- Lam, T. H., Ho, S. Y., Hedley, A. J., Mak, K. H., & Leung, G. M. (2004). Leisure time physical activity and mortality in Hong Kong: Case-control study of all adult deaths in 1998. *Annals of Epidemiology*, 14, 391-398.
- Lee, C.D., Blair, S. N., & Jackson, A. S. (1999). Cardiorespiratory fitness, body composition, and all Cause and cardiovascular disease mortality in men. *American Journal of Clinical Nutrition*, 69, 373-380.
- Lian, W. M., Gan, G. L., Pin, C. H., Wee, S., & Ye, H. C. (1999). Correlates of leisure time physical activity in an elderly population in Singapore. *American Journal of Public Health*, 89, 1578-1580.
- Linnan, L. A., Sorensen, G., Colditz, G., Klar, N., & Emmons, K. M. (2001). Using theory to understand the multiple determinants of low participation in worksite health promotion programs. *Health Education & Behavior*, 28, 591-607.
- Lovato, C. Y., & Green, L. W. (1990). Maintaining employee participation in workplace health promotion programs. *Health Education and Behavior*, 17(1), 73-88.

- Luszczynska, A., & Schwarzer, R. (2003). Planning and self-efficacy in the adoption and maintenance of breast self-examination: A longitudinal study on self-regulatory cognitions. *Psychology and Health*, 18, 93–108.
- Matson-Koffman, D. M., Browntein, J. N., Neiner, J. A., & Greaney, M. L. (2005). A site-specific literature review of policy and environmental interventions that promote physical activity and nutrition for cardiovascular health: what works? *American Journal of Health Promotion*, 19, 167-193.
- Parks, K. M., & Steelman, L. A. (2008). Organizational wellness programs: a meta analysis. *Journal of Occupational Health Psychology*, 13(1), 58-68.
- McAllister, R., & Broeder, C. E. (1993). Wellness strategies help workers adopt healthy habits in lifestyles. *Occupational Health and Safety*, 62(8), 50-54.
- Morgan, W. P., & O'Connor, P. J. (1988). Exercise and mental health. In R. K. Dishman (Ed.), *Exercise Adherence: Its Impact on Public Health* (pp.). Champaign, IL: Human Kinetics Books.
- National Diabetes Information Clearinghouse (NDIC). (2008). *National Diabetes Statistics, 2007*. Retrieved on October 31, 2008, from <http://diabetes.niddk.nih.gov/dm/pubs/statistics/#allages>
- Nunnally, J. C., & Bernstein, I. H. (1994). *Psychometric Theory*, New York: McGraw Hill Inc.
- Petruzzello S. J., Landers, D. M., Hatfield, B. D., Kubitz, K. A., & Salazar, W. (1991). A meta analysis on the anxiety-reducing effects of acute and chronic exercise. *Sports Medicine*, 11, 143-182.
- Prochaska, J. O., & DiClemente, C. C. (1982). Transtheoretical therapy: Toward a more integrative model of change. *Psychotherapy: Theory, Research and Practice*, 19, 276-288.
- Rhodes, R. E., Courneya, K. S., & Hayduk, L. A. (2002). Does personality moderate the theory of planned behavior in the exercise domain? *Journal of Sport & Exercise Psychology*, 2002, 24, 120-132.
- Rogers, R. W. (1983). Cognitive and physiological processes in fear appeals and attitude change: a revised theory of protection motivation. In J. T. Cacioppo & R. E. Petty (Eds.) *Social Psychophysiology: A sourcebook* (pp. 153-176). New York: The Guildford Press.
- Schwarzer, R. (1992). Self-efficacy in the adoption and maintenance of health behaviors: Theoretical approaches and a new model. In R. Schwarzer (Ed.), *Self-efficacy: Thought control of action* (pp. 217-242). Washington, DC: Hemisphere.

- Schwarzer, R. (2008). Modeling health behavior change: How to predict and modify the adoption and maintenance of health behaviors. *Applied Psychology: An International Review*, 57(1), 1-29.
- Sit, C. H. P, Kerr, J. H., & Wong, I. T.F. (2008) Motives for and barriers to physical activity participation in middle-aged Chinese women. *Psychology of Sport and Exercise*, 9, 266-283.
- Sniehotta, F., Scholz, U. & Schwarzer, R. (2005). Bridging the intention-behavior gap: Planning, self-efficacy, and action control in the adoption and maintenance of physical exercise. *Psychology and Health*, 20(2), 143-160.
- Song, T. K., Shephard, R. J., & Cox, M. (1982). Absenteeism, employee turnover and sustained exercise participation. *Journal of Sports Medicine and Physical Fitness*, 22(3), 392-399.
- Sorensen, G., Stoddard, A., Peterson, K., Cohen, N., Hunt, M. K., Stein, E. et al. (1999). Increasing fruit and vegetable consumption through worksites and families in the Treatwell-5-A Day study. *American Journal of Public Health*, 89, 54-60.
- Stambor, Z. (2006). Employees: A company's best asset. *Monitor on Psychology*, 37, 28-30.
- Texas State University-San Marcos. (2008). Texas state wellness program. Retrieved April 11, 2009, from <http://www.txstate.edu/effective/upps/upps-04-04-32.html>
- Velicer, W. F., & DiClemente, C. C. (1993). Understanding and intervening with the total population of smokers. *Tobacco Control*, 2, 95-96.
- Velicer, W. F., Prochaska, J. O., Fava, J. L., Rossi, J. S., Redding, C. A., Laforge, R. G., & Robbins, M. L. (2000). Using the transtheoretical model for population-based approaches to health promotion and disease prevention. *Homeostasis*, 40(5), 174-195.
- Watson, W., & Gauthier, J. (2003). The viability of organizational wellness programs: An examination of promotion results. *Journal of Applied Social Psychology*, 33(6), 1297-1312.
- Wolfe, R., Parker, D., & Napier, N. (1994). Employee health management and organizational performance. *Journal of Applied Behavioral Science*, 30, 22-42.
- World Health Organization (WHO). (2009). Diet and physical activity: A public health priority. Retrieved February 27, 2009, from <http://www.who.int/dietphysicalactivity/en/>

VITA

Cecilia Fidelina Montano was born in Houston, Texas, on April 15, 1985, the daughter of Doris Montano and Jose Montano. After completing her work at Westbury Christian High School, Houston, Texas, in 2003, she entered Andrews University in Berrien Springs, Michigan. She received the degree of Bachelor of Science from Andrews University in May 2007. In August 2007, she entered the Graduate College of Texas State University-San Marcos.

Permanent Address: 11111 Kitty Brook Dr.

Houston, Texas 77071

This thesis was typed by Cecilia F. Montano.

