Abstract

The Role of Self-Efficacy and Possible Selves as Related to Personal Goals in an Employee Wellness Program

By

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The aim of the present study was to explore the role of self-efficacy and possible selves in relation to the attainment of personal goals for participants of an employee wellness program. Also investigated was whether any significant patterns, characteristics, or differences existed between participants who completed the program and those who did not. The results suggest that when a desirable or hoped for possible self is enacted, self-efficacy for goal achievement increases, whereas that same trend is not apparent for self-efficacy beliefs related to undesirable exercise behaviors to be avoided. The most frequently reported goals regarding hoped for possible selves included becoming an exerciser, learning how to exercise, and increasing the frequency of exercise. The most frequently reported goals regarding undesirable behavior(s) the participant wanted to avoid included becoming lazy, thinking negatively, and being unmotivated. No significant trends or patterns were found among participants who completed the wellness program and those who dropped out prematurely.

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Chapter I: Introduction

There is overwhelming empirical evidence regarding the positive effects of exercise on physical and psychological health outcomes. Regular physical activity is important for maintaining a healthy body and enhancing psychological well-being throughout the lifespan (U.S. Department of Health & Human Services [USDHHS], 1991, 2001a). Current findings indicate that 30 to 60 minutes of physical activity on most days can help build strength and fitness, reduce stress, increase energy levels, and improve sleep quality ("Physical Activity Guidelines," 2008). Engaging in exercise behavior on a regular basis helps maintain healthy bones, muscles, and joints, as well as, to control weight, develop lean muscle, and reduce body fat (USDHHS, 1996). Exercise is also a key factor in preventing negative health outcomes and has been shown to reduce the risk of heart disease and other conditions, such as colon cancer, diabetes, osteoporosis, and high blood pressure (Dubbert, 2002; Schaie, Leventhal, & Willis, 2002). Furthermore, regular physical activity has been shown to decrease the risk of premature mortality (USDHHS, 1996, 1999, 2001b). In fact, regular physical activity is now recognized as a critical element in the prevention of disease and enhancement of health in adulthood (Ory & Cox, 1994).

In addition to the multitude of physical health benefits, there is a strong positive association between exercise and psychological well-being (Alfermann & Stoll, 2000; Plante et al., 2007; Salmon, 2000). Empirical research indicates a positive affective response to exercise (Arent, Landers, & Etnier, 2000; Berger & Owen, 1998; Kennedy & Newton, 1997; Lutz, Lochbaum, & Turnbow, 2003; Petruzzello & Tate, 1997), as well as a reduction in anxiety, stress, or negative affect (Breus & O'Connor, 1998; Byrne & Byrne, 1993; Gauvin & Spence, 1995; King, Taylor, & Haskell, 1993; Mutrie, 2000; Taylor, 2000). Exercise participation is

associated with enhanced psychological health (McAuley & Rudolph, 1995), and regular physical activity has even been linked to affective improvements in individuals diagnosed with psychiatric mood disorders (Dunn, Trivedi, Kampert, Clark, & Chambliss, 2005; Nabetani & Tokunaga, 2001; Salmon, 2000).

Despite the evidence that regular exercise improves both physical and psychological well-being, an alarming number of Americans are not regularly active (Dishman & Buckworth, 2001; Schoenborn, Adams, Barnes, Vickerie, & Schiller, 2004). The American College of Sports Medicine (ACSM), the Centers for Disease Control and Prevention (CDC) and the Surgeon General recommend at least 30 minutes of moderate intensity physical activity on most, and preferably all, days of the week (CDC, 2007; Pate et al., 1995; USDHHS, 1996). However, national data indicate that 60% of the adult population does not engage in the aforementioned recommended levels of physical activity and more than 25% are not active at all (Brownson, Jones, Pratt, Blanton, & Heath, 2000; CDC, 2007; King, 2001; USDHHS, 1996). According to the 2009 National Health Interview Survey, 55% of adults never participate in any type of vigorous leisure time physical activity lasting ten minutes or more per week, and only 28% engage in such activity three or more times a week (USDHHS, 2010).

Physical activity behavior varies on a number of demographic factors including gender, race, age, and socioeconomic status. For instance, men are more vigorously physically active than women, and have lower rates of sedentary behavior (Barnes & Schoenborn, 2003). Current research findings indicate that middle aged women are particularly at risk for sedentary behavior (O'Brien Cousins, 1996). In general, Caucasians engage in more physical activity than has been reported for African Americans and Hispanics (Crespo, Smit, Anderson, Carter-Pokras, & Ainsworth, 2000). It has also been noted that moderate physical activity declines with age

(Barnes & Schoenborn, 2003; Marcus, Dubbert, King, & Pinto, 1995). However, some researchers have suggested that older adults might be more willing to follow exercise recommendations because they have an increased concern for their health and more time available to exercise (Lee et al., 1996). Currently, 40.5% of the college aged population does not meet the recommended guidelines for physical activity (CDC, 2005). Additionally, individuals with higher income and education levels are more likely to be physically active (Barnes & Schoenborn, 2003).

According to data from the CDC, the lack of regular physical activity has significantly contributed to the overweight and obesity epidemic in the United States, with only 37% of adults 18 years of age and over maintaining a healthy weight. The remaining 62% of adults were classified as either overweight or obese, with less than 1% of the population classified as underweight (www.cdc.gov/nchs/data). These statistics are alarming as obesity is directly related to an increased risk of cardiovascular disease, hypertension, diabetes, sleep apnea, and breast, colon, endometrial, and prostate cancers (Flegal, Carroll, Ogden, & Johnson, 2002). The health consequences of overweight and obesity also manifest in premature death and disability, accounting for approximately 300,000 deaths each year (Allison, Fontaine, Manson, Stevens, & VanItallie, 1999). According to one source, even moderate weight excess (10 to 20 pounds for a person of average height) can increase the risk of death, particularly among adults aged 30 to 64 years of age (Calle, Thun, Petrelli, Rodriguez, & Heath, 1999). The economic consequences of the obesity epidemic include increased health care costs and loss of productivity and future earnings (Wolf & Colditz, 1998). In 2000, the total cost of overweight and obesity was estimated to be $117 billion (USDHHS, 2001b). Obese and overweight individuals may also suffer from social stigmatization, discrimination, and lowered self-esteem (USDHHS, 2001b).

The importance of making health and wellness initiatives a priority has been established, and thus, a growing number of organizations have recognized the benefits of offering employee wellness programs. Employee wellness 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 design and structure of wellness programs varies greatly across different organizations, but the overall goal is the same: to encourage individuals to make positive health behavior changes. The workplace is a prime environment to initiate a wellness program, as the workplace provides access to a large number of potential participants, as well as, offers supportive social networks for physical activity participation (Shephard, 1996). The advantages to addressing this important issue in the workplace has been recognized by policymakers and researchers alike, and specific national objectives have been set. The Healthy People Worksite Objectives 2010 address the need to increase the number of worksites that offer comprehensive employee wellness programs, as well as, to increase the proportion of employees who participate in such programs (USDHHS, 2001a).

Approximately 70% of the adult population (aged 18 to 65) is employed (USDHHS, 1991). According to the 1999 National Worksite Health Promotion Survey, 90% of all workplaces with 50 or more employees had some form of health promotion program (Aldana, Merrill, Price, Hardy, & Hager, 2005; Association for Worksite Health Promotion, 2000). However, among companies with fitness programs, approximately 80% of eligible employees do not participate, and of the 20% who do participate, only half will maintain participation for the long term (Morgan & O'Connor, 1988; Song, Shephard, & Cox, 1982). These unsettling statistics provide the impetus for change and further attempts to mandate wellness initiatives in the workplace. Although business organizations have increased their awareness of the

importance of such endeavors, there is still a need for drastic improvements in participation and effectiveness.

There are distinct advantages for both employees and employers to strive to improve employee wellness. In recent years, a growing number of organizations have committed to offering employee wellness programs in an attempt to help improve the health of employees, reduce health care costs, decrease absenteeism, improve behaviors associated with increased worker productivity, and to provide an additional health benefit to employees (Bly, Jones, & Richardson, 1986; Bruce, 1984; Heinen & Darling, 2009; Regin, 1987; Sharkey, 1986). According to the American Institute of Stress, organizations lose roughly $300 billion dollars a year because of absenteeism, turnover, workplace stress, and other associated health care costs (Stambor, 2006). However, it has been noted that employee wellness programs can help to reduce employee absenteeism (Chenoweth, 1983; Donoghue, 1977) and turnover (Cox, Shephard, & Corey, 1981; Shepard, 1983), as well as, to control health care costs (Berry, 1981). Positive health behavior change also appears to be related to an increase in worker productivity (Bertera, 1991).

Employers also find that absenteeism is expensive. Absenteeism costs organizations more than 26 million dollars each year (Altchiler & Motta, 1994) and accounts for 10.4 million workdays lost each year (Ho, 1997). A study conducted by Lynch and colleagues (1990) investigated the relationship between participation in a wellness program and the number of absences from work. The results indicated that employees who participated in the wellness program were absent from work less than those who did not (Lynch, Golaszewski, Clearie, Snow, & Vickery, 1990). Organizations that make promoting and encouraging positive health

habits a priority by offering wellness programs to their employees will likely see a reduction in absenteeism.

Thus, a major concern for an organization considering implementing an employee wellness program is bound to be cost effectiveness. There has not been a great deal of research conducted on the topic, but it appears there is a positive trend. According to a USDHHS report (2003), worksite health promotion programs have been shown to yield a significant return on investment for the employer, ranging from $1.49 to $4.91 (median of $3.14) in benefits for every dollar spent on the program.

A multitude of research has been conducted on the effectiveness of employee wellness programs. Employee wellness programs are designed to support staff in their efforts to improve or maintain their level of wellness. Comprehensive wellness programs include both a fitness component and an educational component, such as nutrition or stress reduction classes (Parks & Steelman, 2008). The design and structure of employee wellness programs varies drastically, and more research is needed to identify the effectiveness of different approaches. For example, lower intensity exercise programs have been shown to produce higher adherence rates than those conducted at higher intensities (Epstein, Wing, & Yaloske, 1985) and may be more attractive to non-exercisers. Both individual and organizational factors play a role in the effectiveness of the program and future research should be directed towards gaining a better understanding of these factors (Parks & Steelman, 2008).

A review of the existing literature indicates that in general, organizational interventions have shown small, short term improvements in physical activity among employees (Brown, Mummery, Eakin, & Schofield, 2006). Chyou, Scheuer, and Linneman (2006) evaluated the effects of a worksite based walking incentive program to promote physical activity and well-

being in employees of a private healthcare clinic. The study findings indicate a significant increase in activity levels among 186 of 191 participants, and decreased Body Mass Index (BMI), which is a composite measure of body fat based on height and weight. Research conducted by Pritchard, Nowson, and Wark (1997) followed 58 workers from a business corporation who were participating in a worksite exercise program for weight loss over a 12 month period and found a -4.4% change in BMI among participants. Oden, Crouse, and Reynolds (1989) reported an 8% reduction in body fat among 45 blue collar workers who participated in a 24 week employee fitness program. Other employee wellness interventions have demonstrated moderate to minimal improvements as well (Haines, Davis, Robinson, Neel-Wilson, & Wagner, 2007; Marshall, Owen, & Bauman, 2004; Timperio, Salmon, & Ball, 2004).

As evidenced by an extensive review of the literature, the effort to understand how to promote more active lifestyles is of great importance to the health of our nation. In recent years, the rising cost of health care in combination with abundant evidence of premature morbidity due to unhealthy lifestyle behaviors has led to a push for national health promotion and disease prevention initiatives designed to endorse and encourage the vital benefits of physical activity and healthy dietary habits. It is imperative to determine the extent and mechanisms by which exercise and physical activity can improve health, functional capacity, and quality of life. In accordance with these initiatives, research efforts have been aimed at identifying and examining factors that underlie the initiation and maintenance of regular physical exercise (Abood & Conway, 1992; Dzewaltowski, 1989). In order to accomplish this task, it is necessary to gain an understanding of the link between people's cognitions, motivations, and goals related to exercise (Harju & Reed, 2003).

Introduction to Social Cognitive Theory

Social cognitive theory can be useful in understanding how people acquire and maintain certain behavioral patterns, while also providing the basis for intervention strategies (Bandura, 1997). According to social cognitive theory, the individual, the environment, and the cognitive and emotional processes specific to that individual are reciprocally influential in determining behavior and behavior change (Anderson, Wojcik, Winett, & Williams, 2006). The interaction between these factors will differ based on the individual, the particular behavior being examined, and the specific situation in which the behavior occurs (Bandura, 1989). The social cognitive approach promotes effective self-management of health habits that keep people healthy throughout their lifetime (Bandura, 2005; Lorig & Holman, 2003).

An integral aspect of social cognitive theory is the process of self-regulation. Self-regulation is a self-directed process in which a set of learned cognitions, behaviors, and emotional responses is utilized to achieve a valued goal in an environment under the individual's control (Heatherton & Ambady, 1993; Schunk, 1994; Zimmerman, 1989). The concept of self-regulation refers to systematic efforts to direct thoughts, feelings, and actions, toward the attainment of one's goals (Carver & Scheier, 1998; Vohs & Baumeister, 2004; Zimmerman, 2000). As individuals, we possess self-reflective and self-reactive capabilities that enable us to exercise some control over our thoughts, feelings, motivations, and actions (Bandura, 1991a). These self-regulatory processes allow the individual to develop and enact strategies to appraise progress, revise goals and strategies accordingly, manage emotional responses, and achieve goals (de Ridder & de Wit, 2006). The self-knowledge acquired through this process helps to guide decision making, performance, and behavior related to goal achievement (Bandura, 1991a). Effective self-regulation is more likely when a goal is construed as personally meaningful, supported by favorable expectations about one's ability to execute the necessary actions (self-

efficacy), and the choice of appropriate standards for performance (Mischel, Cantor, & Feldman, 1996). The strategies and motivational value of self-regulation are particularly important when facing obstacles and conflict between goals (Zeidner, Boekaerts, & Pintrich, 2000).

According to the USDHHS (1996), social cognitive theory provides an excellent framework for organizing, understanding, and promoting physical activity and health behavior. Self-management models develop the motivational and self-regulatory skills that enable individuals to manage their own change processes (Abraham, Norman, & Conner, 2000) in order to adopt healthy lifestyles (Bandura, 1997; DeBusk et al., 1994; Lorig & Holman, 2003). Thus, if good health were a goal, the strength of self-regulatory processes associated with that goal would predict the likelihood of engaging in health protective behaviors. Health behavior research can benefit from a self-regulation approach, as it views health behavior as a process of investing in long term goals that require control of immediate needs, which is one of the most important and difficult self-regulatory tasks (Brandtstadter & Renner, 1990; Mischel et al., 1996).

Introduction to Schema Theory

One of the basic assumptions of social cognitive theory is that we develop cognitive generalizations about the self, derived from past experience, that organize and guide the processing of self-related information contained in the individual's social experiences, known as self-schemas (Markus, 1977). Once established, these schemata function as selective mechanisms which organize, summarize, and explain behavior along a particular dimension, and are useful in understanding intentions and feelings and in identifying likely or appropriate patterns of behavior (Markus, 1977). Individuals use their self-schemas to make quick and confident judgments, to adapt flexibly to different information processing goals, and to

accurately retrieve information relevant to that domain. Individuals with a self-schema in a domain have a better organized knowledge structure for their ability in the domain, which facilitates information processing relevant to the domain (Markus, 1977). Empirical research has documented the salience of self-schemata across a variety of different domains including body weight (Markus, Hamill, & Sentis, 1987), gender-role stereotypes (Markus, Crane, Berstein, & Siladi, 1982), religious beliefs (Cacioppo, Petty, & Sidera, 1982), and exercise behavior (Yin & Boyd, 2000).

In order to be schematic for a particular attribute, one must view the behavior as highly descriptive of oneself and consider the attribute an important part of one's self-image (Kendzierski, 1994; Markus, 1977). Therefore, individuals who view themselves as exercisers and consider exercise important to them are thought to have an exercise schema. The cultivation of an exercise self-schema may provide an impetus to initiate an exercise regime, as well as the motivation to continue exercising (Kendzierski, 1988, 1990, 1994). Individuals with exercise self-schemas are more likely to report higher intentions for exercise, as well as to engage in exercise behavior more frequently (Estabrooks & Courneya, 1997). Exercise self-schemata have also been found to be associated with exercise self-efficacy, attitudes towards physical fitness, and self-perceptions of fitness (Yin & Boyd, 2000). A multitude of research efforts have been geared towards exploring and understanding the role that exercise self-schemata play in moderating exercise intentions and exercise behavior.

Introduction to Possible Selves

Self-schemata also serve as the foundation for the development of cognitive representations of oneself in the future, known as possible selves (Markus, Cross, & Wurf, 1990). Possible selves represent individuals' ideas of what they might become, what they would

like to become, and what they are afraid of becoming (Markus & Nurius, 1986). These cognitive representations of the future are socially constructed and are influenced by cultural and historical context, as well as internalized stereotypes and norms relating to important social identities. Possible selves may also be derived from representations of the self in the past, reflecting specific experiences such as prior performances and social comparisons (Cross & Markus, 1991; Hoyle & Sherrill, 2006; Kao, 2000; Knox, Funk, Elliott, & Bush, 1998).

These aspects of future-oriented self-knowledge denote specific, individually significant goals, aspirations, motives, fears, and threats. They motivate and guide actions, emotions, and behavior in personally meaningful ways, by influencing what individuals strive for and what they avoid (Markus & Nurius, 1986). Possible selves often include scripts (mental representations of events), plans, and behavioral control strategies for achieving a goal (Aloise-Young, Hennigan, & Leong, 2001). Possible selves are an integral part of a well functioning self-concept because they provide images of one's self attaining future goals, as well as, images of one's self failing to attain these goals (Lee & Oyserman, 2009).

The concept of possible selves plays an important role in understanding the conceptual link between cognition and motivation (Whaley & Schrider, 2005). Markus and Nurius (1986), state that possible selves "provide the essential link between the self-concept and motivation" (p. 954). They explain that future oriented self-knowledge is both descriptive and motivational. Possible selves influence behavior through a process that involves a comparison and evaluation of one's current and future self. An individual's possible selves represent the internal standards, or goals about who and what they want to become, which are compared with their current state. If a discrepancy between the goal and current state exists, individuals engage in behaviors that they believe will narrow that discrepancy. Possible selves work by personalizing and

individualizing an expectation, integrating the cognitive and affective aspects of that integration with an individual's representation of the self in order to accomplish a goal or task (Markus, Cross, & Wurf, 1990; Ruvulo & Markus, 1992). Possible selves are particularly sensitive to situations that communicate new or inconsistent information about the self. When certain current self-conceptions are challenged or supported, it is our possible selves that determine how we feel and what subsequent course of action we will take. In fact, the more a possible self is valued, the more likely it will be related to the individuals' behavior (Ouellette, Hessling, Gibbons, Reis-Bergan, & Gerrard, 2005). If one has a possible self in a particular domain, not only will information relevant to that domain be processed more efficiently, but it will also be appraised as self-enhancing or self-threatening (Pelham, 1991).

Possible selves are the elements of the self-system that allow the individual to simulate the necessary steps and strategies for accomplishing a goal (Lee & Oyserman, 2009; Oyserman & Markus, 1990b). Through self-directed goals, one can harness motivation and direct action toward self-improvement (Taylor, Neter, & Wayment, 1995). Furthermore, how the self is defined determines what goals are meaningful and what behaviors are enacted to meet those goals (Gollwitzer & Wicklund, 1985). Envisioning one's desired self in the future encourages one's current self to move effectively towards achievement of a desired outcome by enabling the individual to focus attention on specific, task relevant thoughts and feelings, and to organize action (Inglehart, Markus, & Brown, 1989). Ruvolo and Markus (1992) discovered that imagining a possible self of being successful led to better performance on persistence and effort tasks. It has also been established that possible selves can improve one's ability to self-regulate by encouraging one to focus on goals related to exercise (Lee & Oyserman, 2009). Possible selves are most likely to improve self-regulatory ability when they are salient, linked with

strategies, and congruent with other aspects of the self (Lee & Oyserman, 2009). In and of themselves, possible selves are not sufficient to motivate behavior, and thus, it is necessary for individuals to have strategies and plans in place for converting a possible self to action (Whaley, 2003). The possible selves concept has been applied to research in a wide range of populations and contexts including, academic achievement (Clements & Seidman, 2002; Leondari, Syngollitou, & Kiosseoglou, 1998; Oyserman, Bybee, Terry, & Hart-Johnson, 2004), delinquency (Osyerman & Markus, 1990b), career counseling (Chalk, Meara, & Day, 1994); aging (Baltes & Carstensen, 1991; Cross & Markus, 1991; Hooker, 1992; Ryff, 1991); and exercise and health behavior (Hooker & Kaus, 1992; Ouellette et al., 2005).

The possible selves approach to understanding exercise and health behaviors provides a comprehensive, developmental framework in which to study these constructs. Whaley (2003) examined possible selves identified by middle aged adult women at different levels of exercise behavior and discovered that possible selves are a useful construct for examining the process of behavioral change and for planning future exercise interventions. Individuals with health related possible selves may be more likely to attend to, encode, and retrieve information relevant to maintaining their exercise and health goals (Hooker & Kaus, 1994). In fact, an individual's possible selves have been found to be positively related to the processing of future orientated, health related messages (Freeman, Hennessy, & Marzullo, 2001). Hooker and Kaus (1992) discovered that among older adults, possible selves in the domain of health are actually better predictors of health behaviors than are global health values. More specifically, individuals who listed a health related possible self and rated it as important, were engaging in more health related behaviors (Hooker, 1992; Hooker & Kaus, 1992, 1994; Ouellette et al., 2005).

"Hoped for" and "feared" possible selves. When thinking about one's self in the future, individuals are likely to have positive images of the self they desire and expect to become, as well as, negative images of the self he or she wishes to avoid becoming (Lee & Oyserman, 2009). As such, possible selves can represent either positive, hoped for images of the self (the successful self, the compassionate self, the healthy/fit self) or negative, feared images of the self (the lonely self, the depressed self, the unhealthy/unfit self). These cognitive representations about the future represent an individual's aspiration to achieve a desired future state and also to avoid a feared one (Whaley, 2003). Empirical evidence indicates that hoped for possible selves tend to be based on themes of competence and achievement, whereas feared possible selves may contain thoughts and feelings of incompetence and/or failure (Cross & Markus, 1991; Fryberg & Markus, 2003). Both hoped for and feared possible selves are quite malleable, continually shifting in response to feedback about one's self (Kerpelman & Pittman, 2001) or others' successes and failures (Kemmelmeier & Osyerman, 2001). The construction of hoped for and feared possible selves is important because these concepts appear to play an important role in the self-regulation of behavior motivation.

Motivations for health behaviors may be different for positive health motivations (to be active and healthy) as opposed to disease avoidance motivations (unhealthy behavior leads to disease and premature death). The concept of hoped for and feared possible selves allows for the examination of these two types of motivations separately (Leventhal & Hirschman, 1982). In general, individuals are motivated to reduce the discrepancy between their present and hoped for possible selves, thus decreasing the likelihood of becoming their feared selves (Frazier, Hooker, Johnson & Kaus, 2000; Hooker, 1992; Lee & Oyserman, 2009). However, there is some evidence that in terms of health behavior(s), an individual's feared possible selves may actually

be more influential in motivating behavior change (Hooker & Kaus, 1994). A study by Ogilvie (1987) found that participants were more motivated to distance themselves from their feared selves than to strive for their ideal selves. Similarly, Markus and her colleagues argue that a representation of a feared self motivates the person to act in order to deviate from that representation to ensure that the feared qualities never materialize (Markus & Nurius, 1986; see also Carver, Lawrence, & Scheier, 1999; Osyerman & Markus, 1990).

The Role of Self-Efficacy

An individual's self-efficacy beliefs affect the cognitive processing of events, and therefore, have a great influence on changing behavior(s) and goal attainment (Bandura, 1991b). Bandura (1994) defines efficacy as the belief that the self is capable of, and likely to produce, certain levels of performance that are associated with a desired outcome**.** For instance, highly efficacious persons would be more likely to believe that they can achieve a specified goal because they feel confident in regards to their knowledge and ability pertaining to that goal (Bandura, 1982; Carver & Scheier, 1982). These self-efficacy beliefs determine how people gauge their competence and ability in regards to a particular task, and thus serve to influence the way in which we think, feel, and behave.

Self-efficacy beliefs are influenced by past performance accomplishments, social modeling, social or verbal persuasion, and physiological arousal (Bandura, 1982, 1997). In fact, efficacy beliefs are considered to be related to a number of psychosocial responses including anxiety, depression, self-esteem, and affect (Bandura, 1997). Individuals who possess strong self-efficacy beliefs seek to participate in challenging activities and respond with heightened effort and persistence in the face of difficulties and setbacks (Bandura, 1982, 1991b; Bandura & Cervone, 1983).

Empirical evidence has consistently shown self-efficacy to be an important determinant of exercise and health behaviors (Anderson et al., 2006; Conn, 1998; Dzewaltowski, 1989; Dzewaltowski, Noble, & Shaw, 1990; McAuley & Blissmer, 2000; Resnick & Spellbring, 2000; Rudolph & McAuley, 1996). In fact, Bandura (1977, 1986, 1997) proclaimed self-efficacy to be the primary determinant of consistent, health promoting levels of physical activity. The research evidence indicates that self-efficacy is strongly and consistently associated with higher levels of exercise among healthy adults (Garcia & King, 1991; McAuley, 1992; McAuley & Blissmer, 2000; McAuley & Jacobson, 1991). As such, individuals with high levels of self-efficacy for exercise behavior also tend to be more physically active (Bandura, 1997; McAuley & Jacobson, 1991; Rodgers & Sullivan, 2001). Furthermore, self-efficacy is associated with the intensity and frequency of exercise behavior, the amount of effort exerted during exercise, and more positive affective reactions to exercise (Dzewaltowski et al., 1990; McAuley, 1991; McAuley & Jacobson, 1991; Rudolph & McAuley, 1996).

An individual's ability to maintain the belief that he or she is capable of succeeding in the face of challenges or setbacks, is associated with a greater likelihood of reaching one's exercise goal(s) and maintaining a regular exercise regimen (Bandura, 1997). Individuals with exercise self-efficacy are significantly more likely to engage in regular exercise, largely because of their use of self-regulatory strategies such as goal setting, self-monitoring, planning, and problem solving (Rovniak, Anderson, Winett, & Stephens, 2002). It has also been determined that self-efficacy beliefs typically play a more prominent role in the initiation of behavior change and are less influential in maintaining motivation once habits have been formed (McAuley & Blissmer, 2000). This argument is supported by the social cognitive perspective which postulates that the challenges associated with the initiation of an exercise regimen offer a greater opportunity for

mediation by cognitive control than once those behaviors have become a part of one's routine (McAuley & Blissmer, 2000).

Within the health domain, self-efficacy has been shown to be specifically related to exercise, contraceptive behavior, cardiac rehabilitation, weight loss, and nutrition (AbuSabha & Achterberg, 1997; Bandura, 1986, 2004). Von Ah, Ebert, Ngamvitroj, Park, and Kang (2004) found that when self-efficacy levels were high and perceived barriers were low, students were more likely to engage in regular physical activity. In a similar study, university students with higher exercise self-efficacy were significantly more likely to exercise regularly than those with low levels of self-efficacy (Rovniak et al., 2002). A review of the research clearly indicates that perceptions of efficacy play a significant role in determining exercise participation. More specifically, general self-efficacy (perceptions of physical ability) and exercise self-efficacy (perceptions of capability to overcome barriers to exercise) were able to predict frequency (attendance) and intensity of exercise behavior (McAuley, 1992).

The Role of Goal Setting

Goal setting is an integral component of the self-regulation process that enhances motivation, learning, self-efficacy, self-evaluations of progress, and subsequent behavior (Bandura, 1997; Schunk, 1995). By definition, a goal is what an individual is trying to accomplish; it is the object or aim of an action (Weinberg, Bruya, & Jackson, 1985). Goals reflect one's purpose, serve as a standard or objective for action, and refer to quantity, quality, or rate of performance (Locke & Latham, 1990). Setting goals allows the individual to focus on a particular task, select and apply appropriate strategies, and evaluate ongoing performance outcomes (Early, Connolly, & Ekegren, 1989; Early, Wojnaroski, & Prest, 1987; Locke & Latham, 1990; Schunk, 2001).

Attempts to reach goals generate feedback that individuals use to regulate their efforts, reassess their self-efficacy beliefs, and adjust their goals (Campion & Lord, 1982; Kane, Marks, Zaccaro, & Blair, 1996). Feedback is extremely useful as individuals are able to gain information in regards to how well they are meeting their goals, and decide whether or not they need to make any changes to their current behavior in order to reach future goals, which heightens motivation substantially (Bandura, 1991b; Becker, 1978; Locke & Latham, 1990). Empirical evidence clearly supports the effectiveness of goal setting in achieving desired outcomes. In fact, a meta-analysis conducted by Locke, Shaw, Saari, and Latham (1981) found that 99 out of 110 studies empirically demonstrated positive or at least partially positive effects of goal setting on task performance.

Goal specificity. A review of the existing research suggests the influence of specific goal properties on the likelihood of goal attainment. Goals that incorporate operationalized descriptions of performance standards are more likely to lead to goal attainment than vague, general, or no goal comparison groups (Bandura, 1997; Boekaerts, Pintrich, & Zeidner, 2000; Chidester & Grigsby, 1984; Locke & Latham, 1985, 1990; Mento, Steel, & Karren, 1987; Tubbs, 1986; Wood, Mento, & Locke, 1987). Albright, Thompson, and Hultquist (2005) utilized a goal setting intervention to examine exercise behavior in sedentary women. Their findings indicated that the specific goal group (10,000 steps per day) had significantly greater performance than the vague goal group (walking 30 minutes per day). The specificity of the goal statement positively affects performance because the amount of effort required to achieve success is clear, and thus, self-evaluations of progress provide a standard against which to determine progress. A wealth of evidence in various domains supports the preceding benefits of specified goals (Bandura, 1997; Boekaerts et al., 2000; Locke & Latham, 1990).

Goal difficulty. The relationship between the level of difficulty of the goal statement and performance outcomes has also been evaluated. Goal difficulty is a relational characteristic reflecting the match between personal capabilities and goals, not a matter of absolute level (Bandura, 1991). According to research efforts, it is well supported that individuals have a tendency to strive to meet challenging goals. Moderately difficult goals require a greater effort and persistence than easy goals, and thus, a higher level of motivation to achieve. In fact, challenging goals enhance motivation and performance attainments more so than easily achieved or extremely challenging goals (Locke & Latham, 1990; Schunk, 1995). Goals that are moderately difficult seem to have the best effects on motivation, self-regulated performance, and subsequent goal attainment (Locke & Latham, 2002). On the other hand, goals that are too difficult or unrealistic are likely to lead to failure and result in negative self-appraisal and weakened self-efficacy (Kane et al., 1996).

Goal proximity. In terms of the effect of goal proximity (setting short versus long term goals) on performance outcomes, the existing research is inconclusive. Bandura (1982) suggested that short term (proximal) goals are important in improving performance because they provide immediate feedback and reward, whereas long term (distal) goals are too far removed to influence or direct action in the present. Proximal goals strengthen self-efficacy beliefs by allowing for clear and frequent measures of progress (Schunk, 2001). In terms of exercise and health goals, it may be beneficial to set proximal goals in order to reach distal goals. In recent years, researchers have proposed the idea that the use of short term goals in conjunction with long term goals may maximize effectiveness and lead to higher performance levels. According to Weinberg (1992, 1994), the combination of short term and long term goals will result in

greater performance gains than will long term goals alone (Weinberg, 1992, 1994; see also Locke & Latham, 1985).

Personal goals. Researchers have also found that encouraging individuals to set personal goals enhances motivation, self-efficacy beliefs, and self-regulation, which leads to higher goal attainment (Schunk, 1995). The development of personal goals provides further self-incentives and guides for exercise habits that are unique, meaningful, and highly motivating to the individual (Bandura, 2004). Kyllo and Landers (1995) conducted a meta-analytic review of the literature on goal setting and exercise behavior and found that participant set (personal) goals produced greater performance outcomes than experimenter set (assigned) goals. Additionally, the goals people set for themselves predicted their performance level and self-satisfaction better than do the traditional personality measures of need for achievement (Arvery & Dewhirst, 1976; Ostrow, 1976; Yukl & Latham, 1978).

Goal content. The type and content of the goal an individual sets has an important influence on behavioral outcomes. The content of goal statements represents the outcome that is most important to the individual to achieve. Goal content is highly indicative of the individual's underlying motives and priorities and can be viewed as a key indicator of the purpose for behavioral efforts. Goals based on intrinsic motivators reflect competence, interest, and enjoyment of exercise and satisfaction is derived from the act of exercise itself (Fredrick & Ryan, 1993). On the other hand, goals based on extrinsic motivators are performed in order to obtain rewards or outcomes that are separate from the behavior such as body appearance or weight loss (Ryan, Frederick, Lepes, Rubio, & Sheldon, 1997; Winninger, 2007). As applied to exercise and health behaviors, intrinsic motivators seem to be more influential in facilitating exercise participation and subsequent goal attainment. Goals pertaining to physical fitness and

health have been labeled intrinsic, whereas goals related to physical beauty and attractiveness have been labeled extrinsic (Kasser & Ryan, 1996; Vansteenkiste, Lens, & Deci, 2006).

Recent research in the exercise domain examined the impact of intrinsic versus extrinsic goal framing on participants' performance and persistence (Vansteenkiste, Simons, Soenens, & Lens, 2004). Intrinsic motives have been positively related to exercise attendance (Oman & McAuley, 1993) and increased persistence (Davey, Fitzpatrick, Garland, & Kilgour, 2009; Koestner & McClelland, 1990; Pelletier et al., 1995; Pelletier, Fortier, Vallerand, & Briere, 2001; Ryan et al., 1997; Wankel, 1993), whereas extrinsic motives have been negatively related to program adherence (Fredrick & Ryan, 1993; Ryan et al., 1997) and associated with lower levels of participation in sport and exercise (Deci & Ryan, 1985; Hodgins, Yacko, & Gottlieb, 2006). More specifically, extrinsic motives related to body appearance were negatively correlated with hours of participation per week and length of workouts (Ryan et al., 1997) and are not sufficient for long term exercise adherence (Fredrick & Ryan, 1993; Gaskin & Garland, 2005). Furthermore, appearance and weight management motives tend to be associated with negative body image (Ingledew & Sullivan, 2002) and negative affect (Maltby & Day, 2001). Research conducted by Ryan and colleagues (1997) demonstrated that placing greater importance on intrinsic goals relative to extrinsic goals was positively associated with reported exercise engagement, physical self-worth, and psychological well-being and negatively associated with feelings of anxiety (Sebire, Standage, & Vansteenkiste, 2009).

Exercise motives have been shown to be related to type, extent, and stage of exercise participation (Frederick, Morrison, & Manning, 1996; Frederick & Ryan, 1993; Hsiao & Thayer, 1998; Ingledew, Markland, & Medley, 1998; Maltby & Day, 2001; Ryan et al., 1997). Fredrick and Ryan (1993) found that enjoyment, competence, and body related motives varied in

importance according to sports (higher enjoyment and competence motives) versus fitness participants (higher body related motives), suggesting that the type of exercise behavior targeted may be related to a difference in intrinsic versus extrinsic motives. Maltby and Day (2001) found that as individuals' motivations for exercising become internalized, they change from extrinsic motives to more intrinsic motives. For example, an individual who initially engages in an exercise program for body appearance reasons (extrinsic) may in fact come to enjoy exercising (intrinsic) and thus be motivated to continue exercising long term (Davey et al., 2009; Ryan et al., 1997).

Goal Setting as Applied to Exercise and Health Behaviors

The concept of goal setting was initially introduced in the industrial and organizational literature where it's success is well documented (Locke & Latham, 1990). The effectiveness of applying the concept of goal setting to exercise and health behavior also appears to be well established (Kyllo & Landers, 1995; Smith, Hauenstein, & Buchana, 1996). Goal setting is a useful motivational strategy for individuals to initiate exercise behaviors, as well as, to maintain the behaviors long enough to achieve the associated health benefits (Poag & McAuley, 1992). According to Bandura (1989), goals are most influential in the acquisition of a new behavior, such as the initiation of exercise habits (Locke & Latham, 1990; Maddux, 1996; Maddux, Brawley, & Boykin, 1995). The goals on which individuals focus their exercise efforts (to improve health or enhance their appearance) are a common foundation from which to explore the motivation for exercise engagement (Sebire et al., 2009).

There is evidence for the motivational value of specific, difficult goals in increasing exercise performance (Smith et al., 1996). Burton (1989) discovered that swimmers who effectively set goals had faster times than those who were not effective in setting goals. A meta-

analysis conducted by Kyllo and Landers (1995) demonstrated that setting goals in sport and exercise leads to an improvement over baseline measure, an effect that can be maximized by setting moderate goals. A research study by Lowry et al. (2000) determined that college students are more likely to participate in vigorous physical activity if they set health related goals.

The Relationship Between Self-Efficacy and Goals

Research has supported the positive effects of self-efficacy and goal setting on performance across organizational, academic, and athletic settings (Bandura & Jourdan, 1991; Bandura & Wood, 1989; Early & Lituchy, 1991; Gist, Stevens, & Bavetta, 1991; Lee, 1988; Locke, Fredrick, Lee, & Bobko, 1984; Schunk, 1984; Weinberg & Weigand, 1993; Wood, Bandura, & Bailey, 1990; Wood & Locke, 1987; Wurtele, 1986). The relationship between self-efficacy and goal setting has been the focus of a great deal of research as self-efficacy appears to affect goal setting in a variety of ways.

Initially, self-efficacy beliefs affect the level and type of goals individuals adopt, which in turn influences performance (de Ridder & de Wit, 2006). The strength of an individual's belief in his or her competence and ability in regards to a particular task serves as a motivating factor in the pursuit of goal attainment. Individuals with stronger perceived self-efficacy set higher goals for themselves and remain more firmly committed to them because they feel confident in their knowledge and ability to successfully complete the designated task (de Ridder & de Wit, 2006). Self-efficacy influences performance by elevating persistence and effort in response to challenging situations (Kane et al., 1996; Bandura, 1982; Bandura & Cervone, 1983). For example, highly efficacious exercise participants would be expected to persevere in the face of difficulties in order to reach their goals, whereas less efficacious participants would be more likely to exhibit intermittent effort and not be as persistent. Once successful goal attainment has

been achieved, feelings of self-efficacy for the task increase, which likely fosters subsequent positive task performance. Highly efficacious individuals derive satisfaction from meeting goals and challenges, and continue to show interest in activities they know they are good at (Bandura & Schunk, 1981). Goal attainment becomes a motivating factor for future endeavors.

According to Bandura (1997), goal setting influences exercise behavior through the mediating variable of self-efficacy, rather than directly regulating motivation and action. By definition, a mediating variable (self-efficacy) seeks to identify and explicate the mechanism that underlies an observed relationship between the independent (goals) and dependent variables (exercise and health behavior). Thus, a discrepancy between goals and achievements is partly determined by one's belief that one is capable of achieving a particular goal (Bandura 1991a; Locke & Latham, 1990; Wood & Bandura, 1989). Dawson and Brawley (2000) found support for the conceptual mediational relationship between goals, self-efficacy, and exercise among beginning participants. Other researchers claim that self-efficacy has a direct affect on personal goals and motivation, in addition to having a meditational impact on performance outcomes (Early & Lituchy, 1991; Kane et al., 1996; Wood et al., 1990).

Adherence and Maintenance of Exercise Habits

Although progress has been made towards understanding the importance of developing strong exercise and health habits, it appears that even if steps are taken to establish good exercise and health habits; that those initiatives are difficult, if not impossible, to maintain over the long term. Even when individuals begin an exercise program, they often withdraw before any positive health benefits have been achieved (McAuley, Courneya, Rudolf, & Lox, 1994). In fact, the majority of people (60 to 70%) who begin an exercise program fail to maintain this behavior and relapse to inactivity within the first six to nine months (Berger, Pargman, & Weinberg, 2002;

Dishman, 1988; Koivula, 1999; Marcus et al., 2000; Matsumoto & Tekenaka, 2004; Simkin & Gross, 1994). These findings have been replicated with children, college students, middle-aged and elderly persons (Robison & Rogers, 1994). Attrition continues to be one of the least understood aspects of exercise behavior (McAuley, 1992) and a review of the existing literature offers a variety of potential reasons for this phenomenon.

First of all, it is important to note that the factors affecting the adherence and maintenance of exercise habits may be very different from the initial determinants of exercise behavior (Fontana, Kerns, Rosenberg, Marcus, & Colonese, 1986). Results of cross-sectional research have shown that different factors predict activity levels in the adoption versus maintenance stages of an exercise program (Marcus & Simkin, 1994). As previously discussed, the initiation and adoption of an exercise regime is heavily influenced by social cognitive factors such as self-regulation, future oriented self-schemas (possible selves), self-efficacy beliefs, and goal setting. However, once individuals have moved beyond the initial stages of adopting an exercise routine, these factors are no longer as powerfully motivating (McAuley, 1992). As individuals adapt to the demands placed upon them by exercise participation, and exercise becomes a part of one's daily routine, the role of self-efficacy beliefs diminish (McAuley et al., 1994). This theory is supported by the social cognitive perspective, which assumes that efficacy cognitions are most influential in novel or challenging situations (Bandura, 1989; McAuley & Blissmer, 2000). In addition, there are a multitude of barriers which make exercise behaviors difficult to maintain in the long term (McAuley & Blissmer, 2000).

Barriers to exercise adherence. Many individuals intend to be physically active, but lifestyle, demographic, and individual factors seem to impede even the best of intentions (Jones, Harris, Waller, & Coggins, 2005; Petosa, Sminski, & Hortz, 2003). The temptations of everyday

life make it difficult to maintain a healthy diet or a pattern of regular exercise (Rothman, Baldwin, & Hertel, 2004). In fact, lack of time and motivation are the most commonly reported barriers to physical activity among adults (Petosa et al., 2003). However the most compelling finding is that individuals who are less healthy at the start of an exercise program seem to have a more difficult time maintaining exercise behaviors (Chatfield, Brayne, & Matthews, 2005). Jancey, Lee, Howat, Clarke, Wang, and Shilton (2007) reported that participants with a poor history of physical activity were twice as likely to drop out of an exercise program prematurely. Additional research supports the finding that overweight adults are more likely to be insufficiently active and less likely to sustain physical activity programs (Bauman, Smith, Stoker, & Booth, 2002; Bull, Milligan, Rosenberg, & MacGowan, 2000; Dishman, 1991; Jancey et al., 2007; King et al., 1997).

Demographic factors such as distance/location of exercise facility, lack of transportation, job related travel, child care responsibilities, and family demands have also been shown to negatively affect adherence to exercise programs (Biddle, Fox, Boutcher, & Faulkner, 2000; Biddle & Mutrie, 2001; Clark, 1999a, 1999b; Sallis & Owen, 1999; Tu, Stump, Damuch, & Clark, 2004). Interestingly enough, research conducted by Tu and colleagues (2004) suggests that various weather conditions may affect the likelihood of exercise class attendance. The findings of the study revealed that in the hours prior to the exercise class, adverse weather conditions such as heat, wind chill, snowfall, and overcast skies, were associated with a lower likelihood of attendance. Additionally, individuals from lower socioeconomic or educational backgrounds and those suffering from depression are more likely to drop out from exercise programs (Boyette et al., 2002; Dishman, 1991; Jacomb, Jorm, Korten, Christensen, & Henderson, 2002; Jancey et al., 2007; Martin & Sinden, 2001; Van Beijstervelt et al., 2002).

Individual factors also seem to have a strong effect on exercise attrition rates. Sustaining injury, self-consciousness about one's appearance in an exercise facility, and lack of social support have all been shown to increase the likelihood that one elects to not continue exercising (Biddle et al., 2000; Biddle & Mutrie, 2001; Sallis & Owen, 1999). Furthermore, if an individual is engaging in an exercise activity that is too strenuous, or is lacking appropriate instruction, he or she is more likely to discontinue physical activity habits. A lack of improvement in perceived fitness or a failure to quickly meet (often unrealistic) goals are additional factors negatively affecting exercise adherence (Anshel, Reeves, & Roth, 2003; King, 1994; Lox, Martin, & Petruzzello, 2003; Phillips, Schnider, & Mercer, 2004).

Maintenance of Exercise Habits: Completers vs Dropouts

One of the major limitations of research in any domain is that, participants frequently drop out before the study has concluded and therefore we are not able to gather information about those individuals. Research in the exercise and health domain is perhaps even more susceptible to this limitation as attrition rates for exercise programs are commonly high. Martin and Sinden (2001) reviewed 20 studies reporting dropout data and determined that the average dropout rate was 13.7%, with a range of 4-25%. Unfortunately, when participants drop out early, researchers are not often able to gather information as to why the participant elected not to complete the program. Such information would be extremely useful in identifying patterns and understanding factors that lead one to drop out of an exercise program prematurely.

Understanding the maintenance of exercise behavior is still an exploratory area of research, and there is a great deal to be gained if researchers are able to understand how to encourage people to maintain a healthy lifestyle and exercise regime across time. It is important to discover if there are any significant differences among those individuals who maintain

exercise programs (completers) and those who do not (drop outs). Research geared toward assessing the reasons for drop out would allow the opportunity to comprehensively identify differences between completers and dropouts along various constructs (efficacy cognitions, self-regulatory skills, perceptions of social support) which would prove useful in addressing problems with adherence (McAuley et al., 1994).

Only a limited amount of information exists regarding the differences between adherent exercisers and those who dropped out of exercise programs. Dawson and Brawley (2000) found initial differences between completers and dropouts which may suggest that lower values for goal setting and self-efficacy beliefs may be indicative of future adherence problems. Research by McAuley and colleagues (1994) supports the belief that individuals who drop out of exercise programs are significantly less efficacious than those who do not. Sears and Stanton (2001) found that exercise dropouts were predicted by expectancies for fitness and weight. Whaley and Schrider (2005) discovered that if an individual has specific weight related possible selves to the exclusion of other health related goals and these goals are not attained, the individual may be likely to drop out.

Self-Efficacy, Possible Selves, Personal Goals, and Employee Wellness

The aim of the present study was to explore the role of self-efficacy and possible selves in relation to personal goals for participants of an employee wellness program. The present study involved investigation of the relation between self-efficacy and key variables in the wellness domain including possible selves, goal content, and goal attainment. Also investigated was whether any significant patterns, characteristics, or differences existed between participants who completed the employee wellness program and those who did not. These findings will be

useful in drawing conclusions about completers versus dropouts, as well as to aide in future program design and effectiveness.

The first goal of the study was to determine if a change in perceptions of self-efficacy occurred over the duration of the wellness program. This exploration taps into the role of the wellness program in affecting an individual's beliefs regarding his or her ability to meet personal exercise goals regarding desirable exercise behaviors, as well as how capable and likely he or she is of meeting personal goals regarding undesirable exercise patterns to be avoided. Additionally, the relationship between perceptions of self-efficacy and the successful improvement of exercise habits, as well as the successful avoidance of undesirable exercise patterns, were evaluated.

The second empirical goal of the study was to analyze the content of personal goals related to desirable and undesirable exercise behavior(s) reported by participants in the employee wellness program. An examination of the content of the desirable exercise goals may provide a better understanding of what participants hope to be, learn, think, and feel in terms of exercise behaviors, as well as desirable exercise habits they hope to develop and/or maintain. An examination of the content of goals related to undesirable exercise behaviors may provide a better understanding of what participants hope to avoid thinking or becoming, as well as an indication of potential barriers to change for exercise and health behaviors.

In addition, the relationship between personal goal statements and perceptions of self-efficacy were examined to determine if the type of goal set has any bearing on perceptions of self-efficacy regarding goal achievement. Goal statements related to being or becoming an exerciser are indicative of the presence or development of an exercise schema. In accordance with social cognitive theory and the existing relevant research, individuals with a schema in the exercise domain are likely to have greater intentions and motivation to exercise than those who

do not (Estabrooks & Courneya, 1997; Kendzierski, 1988, 1990, 1994), and are also likely to be more efficacious in terms of exercise behavior (Yin & Boyd, 2000). The present study determined whether or not participants with this type of goal did report significantly higher perceptions of self-efficacy than participants who did not develop this type of goal. This exploration included an investigation of any differences in initial reports of self-efficacy (at the start of the wellness program), as well as reported improvements in self-efficacy from pre to post.

The final goal of the present study was to explore patterns and trends between completers and dropouts of the employee wellness program. It is important to determine if differences in initial perceptions of self-efficacy influenced completion rates. It was expected that participants with higher self-report ratings of self-efficacy at baseline would be less likely to drop out of the employee wellness program prematurely. It is also important to determine if participants with certain types of goals were more likely than others to remain active for the duration of the program.

Chapter II: Method

Participants

One hundred and sixty-two East Carolina University faculty and staff members were recruited to participate in the current study, as part of the employee wellness program offered by the ECU Employee Wellness Institute. Of those participants, 85% were female (n = 137) and 15% were male (n = 25). Only 75% of those recruited to participate completed the program (n = 121), whereas 25% dropped out prematurely (n = 40). Since there were only a small number of male participants, the current analysis used only the data from the female participants who completed the study (N = 101). Participant demographics were only collected for four of the ten courses, and thus reflect a subset of the total sample. The average age of the participants surveyed was 42, with ages ranging from 24 to 65. Approximately 75% of the participants surveyed were Caucasian and 25% were African American.

The ECU Employee Wellness Institute is a collaborative effort between the Department of Human Resources and Campus Recreation and Wellness and was designed to promote organizational and individual wellness among members of the campus community. The purpose of the program is to promote healthy lifestyle behaviors by providing educational sessions on a variety of related topics including fitness, stress management, behavior change, and nutrition.

The university employee wellness program was first offered to faculty and staff members during the Spring, 2003, semester and yielded a total of 10 participants. The program continued to be offered each subsequent semester; the present study includes data from the participants of the first 10 courses, conducted from Spring 2003 to Spring 2008. On average, 10 faculty and staff members participated in each course, with course participation ranging from 4 to 17

members. The university employee wellness program was offered to all faculty and staff members, with the exception of those who had previously participated in the program.

The Wellness Institute recruited participants by sending an announcement to all university staff and faculty members via the campus email system (each time the course was being offered). The announcement provided a brief explanation as to the purpose of the employee wellness program, as well as information regarding how to register for the course (see Appendix A). Employees may also have learned of the program during new employee orientation and/or while participating in other wellness institute sponsored events. In order to participate in the program, staff members were required to obtain approval from their supervisor. This was necessary because the course was held in the afternoon, and participants would need to be excused from work in order to attend. Once approval for participation was obtained, faculty and staff members were able to register themselves for the course online. All registered participants were informed via email regarding the date, time, and location of the first session.

Procedure

The employee wellness program consisted of 10 sessions, held once a week in the afternoon. The first session provided an introduction and overview of the employee wellness program, and focused on the concepts of wellness and goal setting. During this session, participants were given a consent form which explained the purpose and procedures of the study including any potential risks, discomforts, and benefits associated with participation, as well as confidentiality and voluntary participation agreements (see Appendix B). At this time, it was also explained that participants would be asked to complete a pre and post-test survey measure as part of their participation in the program, and that the results would provide important insight into our understanding of wellness, as well as to provide feedback that could be used to improve the

overall effectiveness of the program itself. In order to guarantee confidentiality, each participant was asked to create a code name to be used for identification purposes. All subsequent research materials including questionnaire forms and data records were identified solely by this code name.

During the second session, participants were asked to complete the pre-test survey measure (see Appendix C). The self-response measure was designed to assess perceptions of self-efficacy, in relation to exercise, nutrition, and emotional goals. Participants were asked to think about how they would hope to be during the next three months in terms of their exercise habits, and develop goals based on what or how they would hope to be, hope to learn, and hope to think or feel, as well as, to indicate why such goals would be important to them. Additionally, using a 7-point scale, participants rated their responses to the following items: How much do you already have these habits? (1 = *Never like this* to 7 = *Very often like this*); How important is it to you to become this way? (1 =*Not at all important* to 7 = *Very important*); How capable are you of changing/improving? (1 = *Not at all capable* to 7 = *Very capable*); How likely are you to improve in some ways? (1 = *Not at all likely* to 7 = *Very likely*); Were you active as a teen or young adult? (1 = *Inactive* to 7 = *Very active*).

Participants were next asked to think about ways that they did *not* want to feel or act during the next three months in terms of their exercise goals, and develop goals based on what they would wanted to avoid being, avoid thinking and feeling, and habits to avoid, as well as to indicate why such undesirable patterns would be a concern to them. Again, participants rated their responses to a series of items on the 7-point scale: To what extent do you have these undesirable habits now? (1 = *Never like this* to 7 = *Very often like this*); How important is it for you to avoid being this way? (1 = *Not at all important* to 7 = *Very important*); How capable do

you feel of avoiding these? (1 = *Not at all capable* to 7 = *Very capable*); How likely are you to prevent these patterns? (1 = *Not at all likely* to 7 = *Very likely*); Did you dislike exercise as a teen or young adult? (1 = *Never disliked* to 7 = *Very much disliked*).

Furthermore, the self-report measure required participants to develop goals and ratings for desirable and undesirable eating and nutrition habits, as well as desirable and undesirable emotional habits. However, for the purposes of the current study, only data related to exercise goals were analyzed. The self-report measure also included a stress evaluation which was not used in the current study.

The intervention portion of the employee wellness program consisted of eight sessions, with each session focusing on a different wellness topic (see Appendix D for an example syllabus). The wellness topics included behavior change, fitness, nutrition, self-discovery, financial wellness, forgiveness, stress management, and time management. Although the order of the sessions varied somewhat across courses, the same topics were typically covered. Educational and informative presentations were given by qualified and knowledgeable representatives of the wellness staff. The majority of the sessions were held in classrooms located at the Student Recreation Center (SRC) on campus, with the exception of the SRC Orientation session, which was conducted in the gym itself and included a walking tour of the facility, as well as specialized instruction on how to use the fitness equipment properly.

During the final session (upon completion of the program), participants were instructed to complete the post-test survey measure (see Appendix E). The post-test measure was adapted directly from the pre-test measure and required participants to review the goals they had set for themselves and complete the ratings once again. The post-test allowed participants to rate their perceived degree of improvement in achieving goals or avoiding undesirable patterns for goals in

the exercise, nutrition, and emotional domains. The post-test survey measure also included a post-test stress evaluation, although those data were not used in the current study.

At the conclusion of each course, the responses to the survey measures were entered into a database for analysis. Since participants were asked to give open-ended responses in the form of goal statements, their qualitative responses needed to be coded into categories. As is common with qualitative data, in order to be able to interpret patterns and draw conclusions about the goal statements overall, it was necessary to group similar responses together. The first step in creating categories for the goals participants reported was determined by examining the data from the first course. The researchers reviewed all of the goal statements and established general categories that seemed to encompass common themes. The responses were then coded by two independent raters and differences were discussed. It was determined that some of the goal statements were representative of more than one category, and in those cases, were coded in two categories. This process was repeated with the qualitative data from all courses. There was 90% agreement between several independent raters for all coding decisions. A copy of the IRB form granting approval for the present study is available for review (see Appendix F).

Chapter III: Results

Although the present study was not designed to assess the effectiveness of the wellness program, participants were asked to report how successful they felt they had been in improving their exercise habits on a 7-point scale (1 = *Not successful* to 7 = *Very successful).* It appears that the majority of participants felt as though they had been somewhat successful in improving their exercise habits over the course of the wellness program, M = 4.79 , SD = 1.60, N = 100.

In order to determine if differences in perceptions of self-efficacy regarding exercise behaviors occurred over the duration of the wellness program, correlated *t* tests were performed. It was found that participant's reports of self-efficacy beliefs related to desirable exercise behaviors were significantly greater upon completion of the wellness program, M = 5.97, SD = 1.02, N = 96, than at the start of the program, M = 5.66 , SD = 1.06, N = 96, $t(95) = 2.61$, p = .011, d = .3, 95% CI [.07, .52]. However, participants' reports of self-efficacy beliefs related to the avoidance of undesirable exercise behaviors at the start of the wellness program, M = 5.36, SD = 1.02, N = 96, were not significantly different from those reported at the conclusion of the wellness program, M = 5.35, SD = 1.23, N = 96, $t(95) = .11$, p = .91, d = .01, 95% CI [-0.23, 0.25]. It appears that participation in the employee wellness program was related to individuals' beliefs regarding their ability to meet personal exercise goals regarding desirable exercise behavior (hoped for self), but was not found to be related to self-efficacy beliefs regarding undesirable exercise behaviors to be avoided (feared self).

To address the relationship between perceptions of self-efficacy and reports of the successful improvement of exercise habits, a series of correlations were computed. Among participants who completed the wellness program, perceptions of self-efficacy regarding the achievement of desirable exercise goals were significantly related to self-reported improvements

of exercise habits, r (N = 100) = .555, p = .01, 95% CI [.40, .68]. Perceptions of self-efficacy regarding undesirable exercise goals were also significantly related to self-reported improvements in the successful avoidance of undesirable exercise patterns, r (N = 101) = .601, p = .01, 95% CI [.46, .71]. This provides support for the notion that self-efficacy, as well as hoped for and feared possible selves, played a major role in goal achievement.

The next goal of the present study was to analyze the content of the personal goal statements developed by participants in order to get a better understanding of what they hoped to be, learn, and think in terms of exercise behaviors, as well as habits they hoped to develop and/or maintain. In the interest of gaining insight into the relationship between personal goal setting and the role of possible selves, participants were asked to develop both hoped for (desirable) and feared (undesirable) goals for each category. All personal goal statements were coded into pre-determined categories. Frequencies and percentages for the coding of desirable and undesirable goal statements are presented in Table 1.

Personal goal statements regarding desirable exercise behaviors are likely to tap into the presence of a hoped for possible self in the exercise domain. In terms of what participants hoped to be, “an exerciser” was the most frequently coded response. It was also important for participants to feel healthy, have positive feelings towards exercising, and have the energy and motivation necessary to exercise.

Table 1

Frequencies and Percentages for the Coding of Desirable and Undesirable Goal Statements

Desirable (Hoped for) Goals			Undesirable (Feared) Goals		
I hope to be	Count	%	*I hope to avoid being*	Count	%
An Exerciser	53	52.5%	Lazy	36	35.6%
Positive	32	31.7%	Non exerciser	25	24.8%
Healthy	25	24.8%	Irregular exerciser	23	22.6%
Motivated	14	13.9%	Discouraged	12	11.9%
			Overweight	8	7.9%
I hope to learn/think			*I hope to avoid thinking*		
How to exercise	69	68.3%	Negatively	35	34.7%
Positively about the self	47	46.5%	I am discouraged	27	26.7%
Positive emotions	21	20.8%	I am too tired	22	21.8%
How to be healthy	13	12.9%	I am unmotivated	15	14.9%
To relieve pain	12	11.9%	I am lazy	10	9.9%
I have met my goals	12	11.9%	I am overweight	7	6.9%
I have more energy	10	9.9%			
I am healthier	6	5.9%			
I have lost weight	6	5.9%			
I hope to have these habits			*I hope to avoid these habits*		
Exercise more	68	67.3%	Being unmotivated	36	35.6%
Eat healthy	21	20.8%	Overeating	30	29.7%
Maintain exercise habits	20	19.8%	Not exercising	25	24.8%
Lose weight	4	4%	Exercising irregularly	19	18.8%
			Being too tired	9	8.9%

Note. Participants could and often did endorse more than one type of goal statement.

The most frequently endorsed category for what participants hoped to learn was "how to exercise," although participants also indicated a desire to learn how to have positive emotions

related to exercise, how to be healthy, and how to relieve pain. In addition, participants wanted to think more positively about themselves and achieving their goals; envisioning themselves as healthier, thinner, and having more energy. For goals regarding habits that participants hoped to have or develop in the next three months, "increasing the frequency of exercise" was the most common response. Participants also wanted to eat healthy and lose weight, and to make their exercise habits more permanent.

Personal goal statements regarding undesirable exercise behaviors are likely to tap into the presence of a feared possible self in the exercise domain. In terms of what participants hoped to avoid being or becoming, "lazy" was the most frequently coded response. Participants also wished to avoid becoming overweight, discouraged, and someone that doesn't exercise or only exercises irregularly.

The most frequently endorsed category for what participants hoped to avoid thinking was "negatively," although participants also indicated a desire to avoid thinking of themselves as lazy, overweight, unmotivated, tired, and discouraged. In terms of goals regarding habits participants wanted to avoid, "being unmotivated" was the most common response. Participants also wanted to avoid overeating, being too tired, and not exercising or exercising irregularly.

In addition to analyzing the content of the goal statements developed by the participants, it was also beneficial to examine the relationship between different types of goal statements and self-efficacy. In order to determine if participants who developed goals indicative of an exercise schema reported significantly different perceptions of self-efficacy at the start of the wellness program as compared to those who did not develop such goals, an independent samples *t* test was employed. The findings revealed that there was not a significant difference in initial perceptions of self-efficacy for participants who developed goals indicative of an exercise schema, $M = 5.84$,

SD = .87, *N* = 50, and those who did not, *M* = 5.46, *SD* = 1.21, *N* = 47, *t*(95) = 1.8, *p* = .075, *d* =.37, 95% CI [-0.04, 0.77].

A 2 x 2 mixed factorial ANOVA was employed to determine if a change in perceptions of self-efficacy occurred across the duration of the wellness program and if type of goal statement endorsed moderated any such effect. The analysis revealed a significant main effect for pre to post change, *F*(1, 94) = 7.43, *p* =.008, with perceived self-efficacy being greater after completion of the course than it was at pretest, and a significant interaction effect, *F*(1, 94) = 6.05, *p* = .016, but the main effect for type of goal statement endorsed fell short of statistical significance, *F*(1, 94) = .44, *p* = .51. As shown in Table 2, the increase in perceived self-efficacy was greater for those who had not developed goal statements indicating presence of an exercise schema than for those who had developed such goal statements. Correlated *t* tests were employed to test the change in perceived self-efficacy within each group. It was determined that participants who developed goal statements that did not indicate the presence of an exercise schema showed a significant increase in self-efficacy from pre to post testing, *t*(46) = 3.57, *p* = .001, *d* = .55, 95% CI [0.22, 0.87], whereas there was no significant change in self-efficacy beliefs across the duration of the program for those who developed goal statements indicative of an exercise schema, *t*(48) = .19, *p* = .85, *d* = .03, 95% CI [-0.34, 0.28].

Table 2

Mean (Standard Deviation) Perceived Self-Efficacy for Those With an Exercise Schema and Those Without

	Time		
Exercise Schema	Pretest	Posttest	Change (Post-Pre)
Yes	5.86 (.87)	5.89 (1.11)	0.03 (1.11)
No	5.46 (1.21)	6.05 (.92)	0.59 (1.15)*

*$p < .05$ Rating scale 1= not at all capable 7=very capable

The final goal of the present study was to explore patterns and trends between completers and dropouts of the employee wellness program. First, it was important to investigate if initial reports of self-efficacy regarding desirable exercise behaviors had any impact on program success rates for both hoped for (desirable) and feared (undesirable) possible selves. In order to determine if initial perceptions of self-efficacy regarding desirable exercise behaviors had an impact on program completion rates, an independent samples *t* test was employed. The findings indicate that participants who completed the wellness program indicated significantly lower perceptions of self-efficacy at the start of the program, $M = 5.56$, $SD = 1.06$, $n = 97$, than those who dropped out prematurely, $M = 6$, $SD = .78$, $n = 34$, $t(78.4) = 2.02$, $p = .047$, $d = .35$, 95% CI [-0.05, 0.74].

An independent samples *t* test was also employed determine whether perceptions of self-efficacy regarding undesirable exercise behaviors at the start of the wellness program were

related to attrition. It was determined that initial perceptions of self-efficacy for undesirable exercise behaviors were not significantly associated with attrition (for those who completed the program, $M = 5.36$, $SD = 1.02$, $n = 96$; for those who dropped out prematurely, $M = 5.2$, $SD = 1.17$, $n = 33$), $t(127) = .78$, $p = .47$, $d = .16$, 95% CI [-0.24, 0.55].

Finally, in order to explore the relationship between types of goals and completion rates, it was necessary to examine whether participants with certain types of goals were more or less likely to remain active for the duration of the wellness program. In order to determine if differences in goal content affected program success rates, a series of 2 x 2 contingency table analyses were conducted. Relevant statistics can be found in Table 3. As is evident in Table 3, the type of goal statement developed does not appear to be related to completion rates for this sample, with one exception. Participants were significantly more likely to remain active for the duration of the wellness program when they developed goals related to being or becoming healthy than those who did not, $\chi^2(1, N = 159) = 4.69$, $p = .03$, odds ratio = 3.71, 95% CI [1.05, 12.5]. All other types of goal statements fell short of statistical significance.

Table 3.

Relationship between Type of Goal and Completion of the Wellness Program

Type of Goal	χ^2	*p*	Odds ratio
I hope to be an exerciser	.02	.91	1.04
I hope to be positive	.75	.39	.71
I hope to be healthy	4.69	.03*	3.70
I hope to be motivated	.04	.85	1.11
I hope to learn how to exercise	.58	.45	.70
I hope to learn positive emotions	.23	.63	.81
I hope to learn how to be healthy	1.70	.19	.53
I hope to learn how to relieve pain	.63	.43	1.69
I hope to think positively about the self	.20	.66	.84
I hope to think I am healthier	.23	.63	1.47
I hope to think I have lost weight	.63	.43	2.33
I hope to think I have more energy	.40	.53	1.64
I hope to think I have met my goals	.83	.36	1.82
I hope to make exercising more a habit	1.12	.29	.57
I hope to make eating healthy a habit	.61	.44	1.47
I hope to make exercise habits permanent	1.79	.18	.56
I hope to make weight loss a habit	.03	.86	1.22

Note. Odds ratios greater than one indicate that the odds of remaining active during the duration of the course were greater for those who developed the indicated type of goal than for those who did not.

Chapter IV: Discussion

This investigation was designed to examine the role of self-efficacy and possible selves in relation to personal goals for participants of an employee wellness program. Employing Bandura's (1986) social cognitive framework, I expected that self-efficacy beliefs would play a significant role in influencing personal goal statements, possible selves, and goal attainment for exercise behaviors in the wellness domain. It appears that self-efficacy is related to these constructs in a variety of ways. An individual's possible selves serve to motivate and guide actions, emotions, and behavior in personally meaningful ways, by influencing what individuals strive for and what they avoid (Markus & Nurius, 1986). It was predicted that goals regarding both hoped for and feared possible selves would have a positive influence on goal attainment. Lastly, an exploratory investigation of similarities and differences regarding the response patterns of completers and dropouts would provide insight into the types of goal statements that are most often associated with program completion and those indicating potential barriers to exercise adherence.

The role of self-efficacy beliefs over the duration of the employee wellness program was dependant on whether the participant's goal statement depicted a desirable hoped for future self or an undesirable feared future self. It appears that participation in the wellness program played a significant role in affecting an individual's beliefs regarding his or her ability to meet personal goals regarding desirable exercise behavior, but did not have that same effect on self-efficacy beliefs regarding undesirable exercise behaviors to be avoided. When considering goals regarding desirable exercise behaviors (hoped for self), participant's reports of self-efficacy beliefs increased significantly throughout participation in the wellness program. Perceptions of

self-efficacy were also found to be significantly related to reports of the successful improvement of exercise habits, as well as, the successful avoidance of undesirable exercise patterns.

These findings provide some insight towards the role of self-efficacy and the function of possible selves in terms of motivation and goal attainment. First of all, the results of this study provide further support for the prominent role self-efficacy plays in affecting motivation and behavior change in the exercise domain (Anderson et al., 2006; Conn, 1998; Dzewaltowski, 1989; Dzewaltowski, Noble, & Shaw, 1990; Harju & Reed, 2003; Kendzierski, 1988; McAuley & Blissmer, 2000; Resnick & Spellbring, 2000; Rudolph & McAuley, 1996). Having confidence in one's ability to meet desirable goals or avoid undesirable outcomes was shown to be related to the successful improvement or avoidance of habits in the exercise domain. In agreement with the current literature, perceptions of self-efficacy appear to function as a mechanism of the self-regulation process, impacting an individual's thoughts and motivations related to the achievement a hoped for self or the avoidance of a feared self, thus fostering goal attainment for both.

However, the motivational role of possible selves appears to function differently in terms of the achievement of desirable outcomes versus the avoidance of undesirable outcomes. The results of the present study suggest that when a desirable or hoped for possible self is enacted, self-efficacy for goal achievement increases, whereas that same trend is not apparent for self-efficacy beliefs related to undesirable exercise behaviors to be avoided. This provides support for the argument that goals pertaining to hoped for future selves have a greater influence on self-efficacy which in turn, influences motivation. Within the existing literature in the exercise domain, there is evidence to support (Frazier et al., 2000; Hooker, 1992; Lee & Oyserman, 2009) and refute this claim (Hooker & Kaus, 1994; Ogilvie, 1987; Markus & Nurius, 1986; see also

Carver et al., 1999; Osyerman & Markus, 1990b) perhaps indicating that further study is needed to determine whether both are influential in motivating behavior change.

Future research endeavors should attempt to explore the role of possible selves as motivators of behavior change. Presently, it has been suggested that a possible self will have the greatest motivational effect when individuals have both feared and hoped for selves in the same domain (Oyserman & Markus, 1990a, 1990b). In other words, a given possible self will have maximal motivational effectiveness when it is offset or balanced by a countervailing possible self in the same domain. Individuals with a balance between their desired and feared selves in a given domain should have more motivational control over their behavior in this domain (Oyserman & Markus, 1990a). Thus, when an individual has both a hoped for and a feared self for exercise and health behavior(s), the likelihood of positive health behavior increases substantially (Osyerman & Markus, 1990b). Further exploration of this idea will allow us to more clearly understand how the self-regulatory variable interacts to influence motivation and behavior (Whaley, 2003).

The second empirical goal of the study was to analyze the content of personal goal statements related to desirable and undesirable exercise behavior(s) reported by participants in the employee wellness program. The most frequently reported goals regarding desirable behavior(s) the participant wanted to achieve included becoming an exerciser, learning how to exercise, and increasing the frequency of exercise. All of these goal statements tap into the presence of a hoped for possible self in the exercise domain, representing what the individual would like to become. The most frequently reported goals regarding undesirable behavior(s) the participant wanted to avoid included being lazy, thinking negatively, and being unmotivated. These personal goal statements represent one's feared possible self, and characterize what

participants are afraid of becoming or continuing to be. An unexpected and rather noteworthy finding involves the types of goals participants reported least often. Based on previous research findings (Segar, Eccles, Peck, & Richardson, 2007; Strelan, Mehaffey, & Tiggeman, 2003; Tiggeman & Williamson, 2000) and the social climate of our society today, one would expect that a substantial number of goal statements would indicate themes pertaining to physical appearance and/or weight loss. However, all of the coded responses regarding these types of goals were endorsed least often in their respective categories.

It is important to consider the content of personal goal statements because they represent the outcome that is most important to the individual to strive for and/or avoid. The types of goals participants develop are a good indication of the individual's underlying motives and priorities, and serve as a guide for exercise habits that are unique, meaningful, and highly motivating to the individual (Bandura, 2004). Furthermore, researchers have found that encouraging individuals to set personal goals enhances motivation, self-efficacy beliefs, and self-regulation, which leads to higher goal attainment (Schunk, 1995). For participants in the current study, it appears that developing and maintaining exercise habits is of utmost importance when striving to achieve a hoped for possible future self in the exercise domain. On the other hand, avoiding emotional barriers to exercise (thinking negatively, lacking motivation) seem to be the focus of what participants are most determined to avoid.

Although it was expected that participants would develop and endorse goals related to extrinsic motivators (physical appearance, weight loss), it is surprising that these types of goals were not endorsed more frequently (only endorsed by 4 to 7.9% of participants). A study conducted by Segar and colleagues (2007) investigated the specific content of exercise goals midlife women reported and found that 40% endorsed goals related to health benefits, 33%

endorsed goals related to body and weight related concerns, and 26% endorsed goals related to improving mental health and mood. Other findings indicate even higher reports of extrinsic goal content, especially in samples of college-aged women (Strelan et al., 2003; Tiggeman & Williamson, 2000). My findings indicate that extrinsic goals related to weight loss and physical appearance were not a frequent response choice for women in the current sample, and that the most important types of goals for these women were based on other sources of motivation.

In addition to evaluating the content of the personal goal statements participants developed, it was also worthwhile to determine if differences in goal type or content had any effect of initial reports of self-efficacy, as well as, changes in self-efficacy over the duration of the wellness program. In the present study, participants who developed goals indicative of an exercise schema did not report significantly different perceptions of self-efficacy at the start of the wellness program than those who did not. However, further analysis revealed a significant increase in reports of self-efficacy from pre to post testing for only those participants who had developed goal statements that did not indicate the presence of an exercise schema.

These findings support the notion that self-efficacy beliefs are typically associated with the presence of an exercise schema. The cultivation of an exercise schema indicates that the individual views his or herself as an exerciser and considers exercise important (Kendzierski, 1994; Markus, 1977). Participants who develop goals indicative of an exercise schema are more likely to already engage in exercise behavior than those who have yet to form a schema in the exercise domain. Participants who develop goals that are not indicative of an exercise schema are more likely to be non-exercisers, as they have yet to consider exercising an important part of their self-image. This may explain why those who initially did not have an exercise schema seem to have been helped by the program in this study, and increased their self-efficacy by the end of

the intervention. Previous research indicates that in any domain, self-efficacy is most influential in novel situations (McAuley & Blissmer, 2000). For those who do not maintain regular exercise habits, the development and growth of self-efficacy beliefs are likely to play a prominent role in the establishment of exercise behavior. It should also be noted that participants who developed goals indicating the presence of an exercise schema reported higher perceptions of self-efficacy initially than those who did not, and thus, it may have been more difficult to detect a significant change.

An exploratory investigation did not reveal any significant trends or patterns among participants who completed the wellness program versus those who dropped out prematurely. In terms of goals related to hoped for future selves, participants who completed the wellness program indicated significantly lower perceptions of self-efficacy at the start of the program than those who dropped out prematurely. In terms of goals related to feared future selves, participants who completed the wellness program did not differ in initial reports of self-efficacy when compared those who dropped out prematurely. Furthermore, with one exception, the type of goal statement developed was not related to completion rates. Only participants who developed goals related to being or becoming healthy were significantly more likely to complete the wellness program.

Based on the apparent link between self-efficacy and motivation, it would be expected that participants who completed the wellness program would report higher perceptions of self-efficacy initially, for both desirable and undesirable goal statements. In other words, participants who were not as confident in their ability or likelihood to meet the goals they had set for themselves would become discouraged more easily, and be the most likely to drop out of the program. However, the results of the present study do not garner support for that hypothesis;

perhaps those who were not confident in their ability felt a greater need for the program and received more benefit from it. Participants may have had a variety of other unknown reasons for dropping out of the program prematurely. Although self-efficacy is known to be an important part of the self-regulation process that guides our thoughts and actions, it is still unclear as to the specific process by which self-efficacy exerts its influence on motivation and behavior.

Despite the fact that we expected to see a stronger link between type of goal developed and completion of the program, it is not surprising that participants who developed goals related to being or becoming healthy were significantly more likely to complete the wellness program than those who did not. Goals related to being or becoming healthy reflect a competence, interest, and enjoyment of exercise behavior. It is also possible that signing up for a wellness program drew the attention of participants who were very interested in improving health promoting behaviors. These traits would be considered intrinsic sources of motivation, and have been shown to be related to initiation and maintenance of an exercise regime (Vansteenkiste et al., 2004). In fact, exercise goals based on intrinsic motives have been positively related to exercise attendance (Oman & McAuley, 1993) and increased persistence (Davey et al., 2009; Koestner & McClelland, 1990; Pelletier et al., 1995; Pelletier et al., 2001; Ryan et al., 1997; Wankel, 1993). In a similar study conducted by Murru and Martin Ginis (2010), participants who identified a health related possible self were more likely to report engaging in several pro health behaviors (exercising, stress management, weight control).

Any interpretation of these findings should take the following limitations into consideration. The present study relied solely on self-report data, which although widely used, is subject to a variety of potential biases. First, self-report data is subjective in nature, which raises questions about the accuracy of responses. Participants may or may not be forthcoming with

information because they want to present themselves in a certain manner (social desirability bias). It is also important to consider the limitations of the psychometric properties of self-report measures. Self-report measures may not always yield consistent results (reliability) and/or measure what is intended (validity) which can be problematic. Furthermore, due to the nature of the study design, the findings can not imply causation and any interpretations must be made with caution. The design of the present study did not include a control group and therefore any changes that occurred from pre to post, may have been due to any number of factors, either separate from or in addition to the effects of the wellness program. The addition of objective measures or observations of behavior change, such as heart rate, BMI, aerobic capacity, weight loss, and/or amount of time spent exercising, would strengthen the ability to draw conclusions about the findings and provide validation regarding trends and patterns in the data.

As with any type of research, one of the major limitations is participation attrition. Research in the exercise and health domain is particularly susceptible to this problem as 60 to 70% of those who begin an exercise program fail to maintain this behavior and relapse to inactivity within the first six to nine months (Berger et al., 2002; Dishman, 1988; Koivula, 1999; Marcus et al., 2000; Matsumoto & Tekenaka, 2004; Simkin & Gross, 1994). Furthermore, only half of those who participate in employee wellness programs remain active long term (Morgan & O'Connor, 1988; Song, Shephard, & Cox, 1982). When participants drop out prior to the conclusion of the study, we do not know why they elected to do so. Such information would increase our knowledge and understanding of the characteristics of those who drop out of wellness programs prematurely, potential barriers to exercise adherence, and how to improve future interventions and research designs. Although the present study attempted to explore some of the differences between the goal statements and self-efficacy ratings of those who completed

the program versus those who dropped out, no significant patterns or trends emerged. In the future, researchers should include a method of following-up with all participants. Doing so would afford us the knowledge as to why some participants elected to drop out prematurely, as well as, a method of tracking how well participants who completed the program are maintaining their habits.

In order to better understand how exercise behaviors are maintained over time, future researchers may also want to consider employing a longer longitudinal research design. The present study was conducted over a 10 week time period, and therefore, the findings do not tell us how these constructs are related in the long term. On the other hand, conducting longitudinal research would provide the best information about the continuity or discontinuity of behavior over time and allows for the individual tracking of patterns and trends in behavior.

It should also be noted that in order to analyze the qualitative data in the present study, the researchers needed to establish general categories so that independent raters could group the personal goal statements based on common themes. In doing so, the personal goal statements were forced into more broad-spectrum categories, perhaps limiting our ability to account for the specific, personal nature of the goal statement. For example, one participant stated that she wanted to work out four times a week, and her response was coded as 'I hope to be an exerciser.' Although this allowed us to draw conclusions regarding individuals who all indicated goals related to exercising, it restricted our ability to account for any differences among this participant and others who developed non-operationalized, general goals related to exercise. Previous research has identified goal specificity as an important element of successful goal attainment (Locke & Latham, 1990), and it would have been beneficial to consider this factor when coding responses.

The homogeneous characteristics of the participant sample present another limitation. Those recruited to participate in the study were predominantly female, European American faculty and staff members employed at a Southeastern university. The lack of diversity among these participants restricts our ability to make inferences about the population at large, and the extent to which these results can be generalized to other workplace settings is unknown. Future research will need to replicate these findings with men and women of a variety of different demographics (age, race, ethnicity, geographic location) in a variety of settings in order to be able to speak confidently about the link between cognitions, motivations, and behavior in the exercise domain for most people.

Although the wellness program was offered to all university faculty and staff members, participation was voluntary and thus, presented another potential source of bias. Employees who chose to participate represent a group of individuals interested and/or concerned enough about their health and well-being to elect to participate in a wellness program. The flaw with this method of recruitment (convenience sample) is that it does not allow one to gather information about the part of the population that does not elect to participate. Those who do not elect to participate are likely to represent sedentary, non-exercisers that would probably benefit the most from the wellness program. Within the health research domain, sedentary individuals represent one of the most difficult target populations to reach, because so little is known about them. Future researchers are encouraged to reach out to and include sedentary and less active individuals, as it is necessary to increase our understanding of how to engage these individuals in exercise behaviors.

These limitations notwithstanding, the results of the present study contribute to a growing body of evidence in support of the role of self-regulatory variables as integral components of

behavior change in the exercise domain. In an effort to better understand the link between cognitions, motivations, and goals related to exercise the present study explored the role of self-efficacy and the function of possible selves in relation to personal goals in an employee wellness program. Above all else, the findings support previous research indicating the profound role self-efficacy plays in affecting motivation and behavior change, particularly in novel situations. Future research should focus on exploring and understanding how and why this relationship exists in a variety of social contexts.

Possible selves represent the element of the self-regulatory system that allows the individual to simulate the necessary steps and strategies for accomplishing a goal. Thus, the addition of possible selves to the study of exercise behavior enables us to more clearly understand how self-efficacy influences goal directed behavior. The results of the present study suggest that the motivational role of possible selves may function differently based on whether the goal is desirable (hoped for) or undesirable (feared), and it is important to continue to examine the relative utility of hoped for and feared selves as classifiers and predictors of behavior (Whaley, 2003).

The present study did not reveal much about the differences between completers and dropouts. However, it is clear that in the future, all research should include methods for follow-up as the factors affecting adherence and maintenance of exercise habits may be very different from the initial determinants of exercise behavior (Fontana et al., 1986). Research designed to assess the reasons for drop out would increase our understanding of the role of the self-regulatory system in affecting long term adherence. Understanding the role of the self-regulatory system in this context may lead to the successful maintenance of exercise habits.

From a practical perspective, research in the exercise and health domain has important implications regarding the health of our nation. The extensive benefits of regular exercise have been well established and knowledge gained from research in this domain will be used to promote active lifestyles across a variety of settings. The present study was part of an evaluation of an employee wellness program at a large Southeastern university. These findings will contribute to the continued need to implement effective health and wellness programs in the workplace. The following recommendations may help to improve future research evaluating this program: the addition of a control group for comparative purposes, utilizing objective measures to monitor behavior change, offering follow-up sessions to allow for the analysis of maintenance habits, as well as, including a method for following up with participants who elected to drop out prior to the completion of the program. Evaluations of participant satisfaction and improvement will help to shape future employee wellness program development.

The overarching purpose of this research was to identify and explore the relationship among key factors in the social cognitive domain in an effort to better understand how the determinants of exercise behavior function. Once we have a better theoretical understanding of how these self-regulatory variables interact with one another to influence motivation and goal attainment, we will be in a position to use that knowledge to develop strategies to increase exercise behavior and promote a change in lifestyle and health habits nationwide. It is also necessary to continue to explore the processes underlying these changes in order to determine ways to facilitate the development of successful interventions. If we can determine how to maximize an individual's potential for exercise by tapping into his/her self-regulatory system, we will be able to develop interventions specifically designed to facilitate the adoption and adherence of exercise regimes.

References

Abood, D. A., & Conway, T. L. (1992). Health value and self-esteem as predictors of wellness behavior. *Health Values, 16,* 20-26.

Abraham, C., Norman, P., & Conner, M. (2000). Towards a psychology of health-related behaviour change. In P. Norman, C. Abraham, & M. Conner (Eds.), *Understanding and changing health behaviour: From health beliefs to self-regulation* (pp. 343-369). Amsterdam: Harwood.

AbuSabha, R., & Achterberg, C. (1997). Review of self-efficacy and locus of control for nutrition and health-related behavior. *Journal of the American Dietetic Association, 97,* 1122-1132.

Albright, C., Thompson, D. L., & Hultquist, C. N. (2005). Comparison of walking recommendations in previously inactive women. *Medicine and Science in Sports and Exercise, 37,* 676-683.

Aldana, S. G., Merrill, R. M., Price, K., Hardy, A., & Hager, R. (2005). Financial impact of a comprehensive multisite workplace health promotion program. *Preventive Medicine, 4,* 31-137.

Alfermann, D., & Stoll, O. (2000). Effects of physical exercise on self-concept and well-being. *International Journal of Sport Psychology, 31,* 47-65.

Allison, D. B., Fontaine, K. R., Manson, J. E., Stevens, J., & VanItallie, T. B. (1999). Annual deaths attributable to obesity in the United States. *Journal of the American Medical Association, 282,* 1530-1538.

Aloise-Young, P. A., Hennigan, K. M., & Leong, C. W. (2001). Possible selves and negative health behaviors during early adolescence. *The Journal of Early Adolescence, 21,* 158-181.

Altchiler, L., & Motta, R. (1994). Effects of aerobic and non-aerobic exercise on anxiety absenteeism, and job satisfaction. *Journal of Clinical Psychology, 50,* 829-840.

Anderson, E. S., Wojcik, J. R., Winett, R. A., & Williams, D. M. (2006). Social-cognitive determinants of physical activity: The influence of social support, self-efficacy, outcome expectations, and self-regulation among participants in a church-based health promotion study. *Health Psychology, 25,* 510-520.

Anshel, M. H., Reeves, L., & Roth, R. (2003). *Concepts in fitness: A balanced approach to good health.* Boston: Pearson Education.

Arent, S. M., Landers, D. M., & Etnier, J. L. (2000). The effects of exercise on mood in the elderly: A meta-analytic review. *Journal of Aging and Physical Activity, 8,* 407-430.

Arvey, R. D., & Dewhirst, H. D. (1976). Goal-setting attributes, personality variables, and job satisfaction. *Journal of Vocational Behavior, 9,* 179-190.

Association for Worksite Health Promotion. U.S. Department of Health and Human Services, William M. Mercer Inc (2000). *1999 National Worksite Health Promotion Survey.* Northbrook, IL: Association for Worksite Health Promotion and William M. Mercer, Inc.

Baltes, M. M., & Carstensen, L. L. (1991). 'Possible selves across the life span': Comment. *Human Development, 34,* 256-260.

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review, 84,* 191-215.

Bandura, A. (1982). Regulation of cognitive processes through perceived self-efficacy. *Developmental Psychology, 25,* 729-778.

Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory.* Englewood Cliffs, NJ: Prentice-Hall.

Bandura, A. (1989). Human agency in social cognitive theory. *American Psychologist, 44,* 1175-1184.

Bandura, A. (1991a). Social cognitive theory of self-regulation. *Organizational Behavior and Human Decision Processes, 50,* 248-187.

Bandura, A. (1991b). Self-regulation of motivation through anticipatory and self-regulatory mechanisms. In R. A. Dienstbier (Ed.), *Perspectives on motivation: Nebraska symposium on motivation* (pp. 69-164). Lincoln: University of Nebraska Press.

Bandura, A. (1994). Self-efficacy. In R. J. Corsini (Ed.), *Encyclopedia of psychology* (2nd ed., Vol. 3, pp. 368-369). New York, NY: Wiley.

Bandura, A. (1997). *Self-efficacy: The exercise of control.* New York, NY: Freeman.

Bandura, A. (2004). Health promotion by social cognitive means. *Health Education and Behavior, 31,* 143-164.

Bandura, A. (2005). The growing centrality of self-regulation in health promotion and disease prevention. *The European Health Psychologist, Issue 1,* 11-12.

Bandura, A., & Cervone, D. (1983). Self-evaluative and self-efficacy mechanisms governing the motivational effects of goal systems. *Journal of Personality and Social Psychology, 45,* 1017-1028.

Bandura, A., & Jourdan, F. J. (1991). Self-regulatory mechanisms governing the impact of social comparison on complex decision making. *Journal of Personality and Social Psychology, 60*, 941-951.

Bandura, A., & Schunk, K. M. (1981). Cultivating competence, self-efficacy and intrinsic interest through proximal self-motivation. *Journal of Personality and Social Psychology, 41*, 586-598.

Bandura, A., & Wood, R. E. (1989). Effect of perceived controllability and performance standards on self-regulation of complex decision making. *Journal of Personality and Social Psychology, 56*, 805-814.

Barnes, P. M., & Schoenborn, C. A. (2003). Physical activity among adults: United States, 2000. *Advance Data, 333*, 1-23.

Bauman, A., Smith, B., Stoker, L., & Booth, M. (2002). *Getting Australia active: Towards better practice for the promotion of physical activity*. Melbourne, Australia: National Public Health Partnership.

Becker, L. J. (1978). Joint effect of feedback on goal-setting on performance: A field study of residential energy conservation. *Journal of Applied Psychology, 63*, 428-433.

Berger, B. G., & Owen, D. R. (1998). Relation of low and moderated intensity exercise with acute mood change in college joggers. *Perceptual and Motor Skills, 87*, 611-621.

Berger, B. G., Pargman, D., & Weinberg, R. S. (2002). Exercise and enhanced self-concept and self-esteem. In B. G. Berger (Ed.), *Foundations of Exercise Psychology* (pp. 53-62). Morgantown, WV: Fitness Information Technology.

Berry, C. (1981). *An approach to good health for employees and reduced health care costs for industry*. Washington, DC: Health Insurance Association of America.

Bertera, R. L. (1991). The effects of behavioral risks on absenteeism and health-care costs in the workplace. *Journal of Occupational Medicine, 33,* 1119-1123.

Biddle, S. J. H., Fox, K. R., Boutcher, S. H., & Faulkner, G. E. (2000). The way forward for physical activity and the promotion of psychological well-being. In S. J. H. Biddle, K. R. Fox, & S. H. Boutcher (Eds.), *Physical activity and psychological well-being* (pp. 154-168). London, UK: Routledge.

Biddle, S. J. H., & Mutrie, N. (2001). *Psychology of physical activity: Determinants, well-being, and interventions.* London, UK: Routledge.

Bly, J. L., Jones, R. C., & Richardson, J. E. (1986). Impact of worksite health promotion on health care costs and utilization. Evaluation of Johnson & Johnson's Live for Life program. *Journal of the American Medical Association, 23,* 3235-3240.

Boekaerts, M., Pintrich, P. R., & Zeidner, M. (2000). *Handbook of self-regulation.* San Diego, CA: Academic Press.

Boyette, L., Lloyd, A., Boyette, J., Watkins, E., Furbush, L., Dunbar, S., & Brandon, J. (2002). Personal characteristics that influence exercise behaviour of older adults. *Journal of Rehabilitation Research and Development, 39,* 95-103.

Brandstadter, J., & Renner, G. (1990). Tenacious goal pursuit and flexible goal adjustment: Explication and age-related analysis of assimilative and accommodative strategies of coping. *Psychology and Aging, 5,* 58-67.

Breus, M. J., & O'Connor, P. J. (1998). Exercise-induced anxiolysis: A test of the time-out hypothesis in high-anxious females. *Medicine and Science in Sports and Exercise, 30,* 1107-1112.

Brown, W. J., Mummery, K., Eakin, E., & Schofield, G. (2006). 10,000 steps Rockhamptom: Evaluation of a whole community approach to improving population levels of physical activity. *Journal of Physical Activity and Health, 1,* 1-14.

Brownson, R. C., Jones, D. A., Pratt, M., Blanton, C., & Heath, G. W. (2000). Measuring physical activity with the behavioral risk factor surveillance system. *Medicine and Science in Sports and Exercise, 321,* 1913-1918.

Bruce, R. A. (1984). Exercise, functional aerobic capacity, and aging: Another viewpoint. *Medicine and Science in Sport and Exercise, 16,* 8-13.Bull, F., Milligan, R., Rosenberg, M., & MacGowan, H. (2000). *Physical activity levels of Western Australian adults 1999.* Perth: Health Department of Western Australia, Western Australian Government.

Burton, D. (1989). Winning isn't everything: Examining the impact of performance goals on collegiate swimmers' cognitions and performance. *The Sport Psychologist, 3,* 105-132.

Byrne, A., & Byrne, D. G. (1993). The effect of exercise on depression, anxiety, and other mood states: A review. *Journal of Psychosomatic Research, 37,* 565-574.

Cacioppo, J. T., Petty, R. E., & Sidera, J. A. (1982). The effects of a salient self-schema on the evaluation of pro-attitudinal editorials: Top-down versus bottom-up message processing. *Journal of Experimental Social Psychology, 18,* 324-338.

Calle, E. E., Thun, M. J., Petrelli, J. M., Rodriguez, C., Heath, C.W. (1999). Body mass index and mortality in a prospective cohort of U.S. adults. *The New England Journal of Medicine, 341,* 2207-2212.

Campion, M. A., & Lord, R. G. (1982). A control systems conceptualization of the goal-setting and changing process. *Organizational Behavior and Human Performance, 30,* 265-287.

Carver, C. S., Lawrence, J. W., & Scheier, M. F. (1999). Self-discrepancies and affect: Incorporating the role of feared selves. *Personality and Social Psychology Bulletin, 25,* 783-792.

Carver, C. S., & Scheier, M. F. (1982). Control theory: A useful conceptual framework for personality-social, clinical, and health psychology. *Psychological Bulletin, 92,* 111-135.

Carver, C. S., & Scheier, M. F. (1998). *On the self-regulation of behavior.* New York: Cambridge University Press.

Centers for Disease Control and Prevention (CDC). (2005). *Behavioral Risk Factor Surveillance System Survey data.* Atlanta, GA: U.S. Department of Health and Human Services.

Centers for Disease Control and Prevention. (2007). Prevalence of physical activity among adults—United States, 2001 and 2005. *Morbidity and Mortality Weekly Report, 56,* 1209-1212.

Chalk, L. M., Meara, N. M., & Day, J. D. (1994). Possible selves and occupational choices. *Journal of Career Assessment, 2,* 364-383.

Chatfield, M., Brayne, C., & Matthews, F. (2005). A systematic literature review of attrition between waves in longitudinal studies in the elderly shows a consistent pattern of dropout between differing studies. *Journal of Clinical Epidemiology, 58,* 13-19.

Chenoweth, D. (1983). Health promotion: Benefits versus costs. *Occupational Health and Safety, 52,* 37-41.

Chidester, T. R., & Grigsby, W. C. (1984). A meta-analysis of the goal setting-performance literature. In J. A. Pearce & R. B. Robinson (Eds.), *Proceedings: Forty-fourth annual meeting of the Academy of Management* (pp. 202-206). Boston, MA: Academy of Management.

Chyou, P., Scheuer, D., & Linneman, J. G. (2006). Assessment of female participation in an employee 20-week walking incentive program at Marshfield Clinic, a large multispecialty group practice. *Clinical Medicine and Research, 4,* 256-265.

Clark, D. O. (1999a). Identifying psychological, physiological, and environmental barriers and facilitators to exercise among older low income adults. *Journal of Clinical Geropsychiatry, 5,* 51-62.

Clark, D. O. (1999b). Physical activity and its correlates among urban primary care patients aged 55 years or older. *Journals of Gerontology Series B: Psychological Sciences and Social Sciences, 54,* 41-48.

Clements, M., & Seidman, E. (2002). The ecology of middle grades schools and possible selves: Theory, research, and action. In T. M. Brinthaupt & R. P. Lipka (Eds.), *Understanding early adolescent self and identity: Applications and interventions* (pp. 133-164). Albany, NY: State University of New York Press.

Conn, V. S. (1998). Older adults and exercise: Path analysis of self-efficacy related constructs. *Nursing Research, 47,* 180-189.

Cox, M., Shephard, R. J., & Corey, P. (1981). Influence of an employee fitness programme upon fitness, productivity and absenteeism. *Ergonomics, 24,* 795-806.

Crespo, C. J., Smit, E., Anderson, R. E., Carter-Pokras, O., & Ainsworth, B. E. (2000). Race/ethnicity, social class, and their relation to physical activity during leisure time: Results from the Third National Health and Nutrition Examination Survey, 1988-1994. *American Journal of Preventive Medicine, 18,* 46-53.

Cross, S., & Markus, H. (1991). Possible selves across the life span. *Human Development, 34,* 230-255.

Davey, J., Fitzpatrick, M., Garland, R., & Kilgour, M. (2009). Adult participation motives: Empirical evidence from a workplace exercise programme. *European Sport Management Quarterly, 9,* 141-162.

Dawson, K. A., & Brawley, L. R. (2000). Examining the relationship between exercise goals, self-efficacy, and overt behavior with beginning exercisers. *Journal of Applied Social Psychology, 30,* 315-329.

DeBusk, R. F., Miller, N. H., Superko, H. R., Dennis, C. A., Thomas, R. J., Lew, H. T., … Taylor, C. B. (1994). A case-management system for coronoary risk factor modification. *Annals of Internal Medicine, 120,* 721-729.

Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior.* New York, NY: Plenum.

de Ridder, D. T. D., & de Wit, J. B. F. (2006). Self-regulation in health behavior: Concepts, theories, and central issues. In D. T. D. de Ridder & J. B. F. de Wit (Eds.), *Self-regulation in health behavior* (pp. 1-23). Chichester, West Sussex UK: Wiley.

Dishman, R. K. (1988). *Exercise adherence: Its impact on public health.* Champaign, IL: Human Kinetics.

Dishman, R. K. (1991). Increasing and maintaining physical activity and exercise. *Behavioural Therapy, 41,* 3-15.

Dishman, R. K., & Buckworth, J. (2001). *Exercise Psychology.* Champaign, IL: Human Kinetics.

Donoghue, S. (1977). The correlation between physical fitness, absenteeism and work performance. *Canadian Journal of Public Health, 68,* 201-203.

Dubbert, P. M. (2002). Physical activity and exercise: Recent advances and current challenges. *Journal of Consulting and Clinical Psychology, 70,* 526-536.

Dunn, A. L., Trivedi, M. H., Kampert, J. B., Clark, C. G., Chambliss, H. O. (2005). Exercise treatment for depression: efficacy and dose response. *American Journal of Preventive Medicine, 28,* 1-8.

Dzewaltowski, D. A. (1989). Towards a model of exercise motivation. *Journal of Sport and Exercise Psychology, 11,* 251-269.

Dzewaltowski, D. A., Noble, J. M., & Shaw, J. M. (1990). Physical activity participation: Social cognitive theory versus the theories of reasoned action and planned behavior. *Journal of Sport and Exercise Psychology, 12,* 388-405.

Early, P. C., Connolly, T., & Ekegren, G. (1989). Goals, strategy development, and task performance: Some limits on the efficacy of goal-setting. *Journal of Applied Psychology, 74,* 24-33.

Early, P. C., & Lituchy, T. R. (1991). Delineating goal and efficacy effects: A test of three models. *Journal of Applied Psychology, 74,* 81-98.

Early, P. C., Wojnaroski, P., & Prest, W. (1987). Task planning and energy expended: Exploration of how goals influence performance. *Journal of Applied Psychology, 72,* 107-114.

Epstein, L. H., Wing, R. R., & Yaloske, A. (1985). A comparison of lifestyle exercise, aerobic exercise, and calisthenics on weight loss in obese children. *Behavior Therapy, 16,* 345-356.

Estabrooks, P., & Courneya, K. S. (1997). Relationships among self-schema, intention, and exercise behavior. *Journal of Sport and Exercise Psychology, 19,* 156-168.

Flegal, K. M., Carroll, M. D., Ogden, C. L., & Johnson, C. L. (2002). Prevalence and trends in obesity among U.S. adults, 1999-2000. *Journal of the American Medical Association, 288,* 1723-1727.

Fontana, A. F., Kerns, R. D., Rosenberg, R. L., Marcus, J. L., & Colonese, K. L. (1986). Exercise training for cardiac patients: Adherence, fitness, and benefits. *Journal of Cardiopulmonary Rehabilitation, 6,* 4-15.

Frazier, L. D., Hooker, K., Johnson, P. M., & Kaus, C. R. (2000). Continuity and change in possible selves in later life: A 5-year longitudinal study. *Basic and Applied Social Psychology, 22,* 237-243.

Frederick, C. M., Morrison, C., & Manning, T. (1996). Motivation to participate, exercise affect, and outcome behaviors toward physical activity. *Perceptual and Motor Skills, 82,* 691-701.

Frederick, C. M., & Ryan, R. M. (1993). Differences in motivation for sport and exercise and their relations with participation and mental health. *Journal of Sport Behavior, 16,* 124-146.

Freeman, M. A., Hennessy, E. V., & Marzullo, D. M. (2001). Defensive evaluation of anti-smoking messages among college-age smokers: The role of possible selves. *Health Psychology, 20,* 424-433.

Fryberg, S. A., & Markus, H. R. (2003). On being American Indian: Current and possible selves. *Self and Identity, 2,* 325-344.

Garcia, A. W., King, A. C. (1991). Predicting long-term adherence to aerobic exercise: A comparison of two models. *Journal of Sport and Exercise Psychology, 13,* 394-410.

Gaskin, C., & Garland, R. (2005). Occupying the crease: An exploration of youth cricket in New Zealand. *European Sport Management Quarterly, 5,* 357-379.

Gauvin, L., & Spence, J. C. (1995). Psychological research on exercise and fitness: Current research trends and future challenges. *Sport Psychology, 9,* 434-448.

Gist, M. E., Stevens, C. K., & Bavetta, A. G. (1991). Effects of self-efficacy and post-training intervention on the acquisition and maintenance of complex interpersonal skills. *Personnel Psychology, 44,* 837-861.

Gollwitzer, P. M., & Wicklund, R. A. (1985). The pursuit of self-defining goals. In J. Kuhl & J. Beckmann (Eds.), *Action control: From cognition to behavior* (pp. 61-85). New York, NY: Springer-Verlag.

Haines, D. J., Davis, L., Robinson, M., Neel-Wilson, T., & Wagner, S. (2007). A pilot intervention to promote walking and wellness to improve the health of college faculty and staff. *Journal of American College Health, 55,* 219-225.

Harju, B. L., & Reed, J. M. (2003). Potential clinical implications of implicit and explicit attitudes within possible exercise selves schemata: A pilot study. *Journal of Clinical Psychology in Medical Settings, 10,* 201-208.

Heatherton, T. F., & Ambady, N. (1993). Self-esteem, self-prediction, and living up to commitments. In R. F. Baumeister (Ed.), *Self-esteem: The puzzle of low self-regard* (pp. 131-145). New York, NY: Plenum Press.

Heinen, L., & Darling, H. (2009). Addressing obesity in the workplace: The role of employers. *The Milbank Quarterly, 87,* 101-122.

Ho, J. T. S. (1997). Corporate wellness programmes in Singapore: Effect on stress, satisfaction, and absentessism. *Journal of Managerial Psychology, 12,* 177-189.

Hodgins, H. S., Yacko, H. A., & Gottlieb, E. (2006). Autonomy and non-defensiveness. *Motivation and Emotion, 30,* 283-293.

Hooker, K. (1992). Possible selves and perceived health in older adults and college students. *Journal of Gerontology: Psychological Sciences, 47,* 85-95.

Hooker, K., & Kaus, C. R. (1992). Possible selves and health behaviors in later life. *Journal of Aging Health, 4,* 390-411.

Hooker, K., & Kaus, C. R. (1994). Health-related possible selves in young and middle adulthood. *Psychology and Aging, 9,* 126-133.

Hoyle, R. H., & Sherrill, M. R. (2006). Future orientation in the self-system: Possible selves, self-regulation, and behavior. *Journal of Personality, 74,* 1673-1696.

Hsiao, E. T., & Thayer, R. E. (1998). Exercising for mood regulation: The importance of experience. *Personality and Individual Differences, 24,* 829-836.

Ingledew, D. K., Markland, D., & Medley, A. R. (1998). Exercise motives and stages of change. *Journal of Health Psychology, 3,* 477-489.

Ingledew, D. K., & Sullivan, G. (2002). Effects of body mass and body image on exercise motives in adolescence. *Psychology of Sport and Exercise, 3,* 323-338.

Inglehart, M. R., Markus, H., & Brown, D. R. (1989). The effects of possible selves on academic achievement: A panel study. In J. M. Innes (Ed.), *Recent advances in social psychology: An international perspective* (pp. 469-477). Amsterdam, Holland: Elsevier Science.

Jacomb, P., Jorm, A., Korten, A., Christensen, H., & Henderson, A. (2002). Predictors of refusal to participate: A longitudinal health survey of the elderly in Australia. *BioMed Central Public Health, 2,* 1-6.

Jancey, J., Lee, A., Howat, P., Clarke, A., Wang, K., & Shilton, T. (2007). Reducing attrition in physical activity programs for older adults. *Journal of Aging and Physical Activity, 15,* 152-165.

Jones, F., Harris, P., Waller, H., & Coggins, A. (2005). Adherence to an exercise prescription scheme: The role of expectations, self-efficacy, stage of change and psychological well-being. *British Journal of Health Psychology, 10,* 359-378.

Kane, T. D., Marks, M. A., Zaccaro, S. J., & Blair, V. (1996). Self-efficacy, personal goals, and wrestlers' self-regulation. *Journal of Sport and Exercise Psychology, 18,* 36-48.

Kao, G. (2000). Group images and possible selves among adolescents: Linking stereotypes to expectations by race and ethnicity. *Sociological Forum, 15,* 407-430.

Kasser, T., & Ryan, R. M. (1996). Further examining the American dream: Differential correlates of intrinsic and extrinsic goals. *Personality and Social Psychology Bulletin, 22,* 280-287.

Kemmelmeier, M., & Oyserman, D. (2001). The ups and downs of thinking about a successful other: Self-construals and the consequences of social comparisons. *European Journal of Social Psychology: Special Issue, 31,* 311-320.

Kendzierski, D. (1988). Self-schemata and exercise. *Basic and Applied Social Psychology, 9,* 45-59.

Kendzierski, D. (1990). Exercise self-schemata: Cognitive and behavioral correlates. *Health Psychology, 9,* 69-82.

Kendzierski, D. (1994). Schema theory: An information processing focus. In R. K. Dishman (Ed.), *Advances in exercise adherence* (pp. 137-159). Champaign, IL: Human Kinetics.

Kennedy, M. M., & Newton, M. (1997). Effect of exercise intensity on mood in step aerobics. *Journal of Sports Medicine and Physical Fitness, 37,* 200-204.

Kerpelman, J., & Pittman, J. (2001). The instability of possible selves: Identity processes within late adolescents' close peer relationships. *Journal of Adolescence, 24,* 491-512.

King, A. C. (1994). Clinical and community interventions to promote and support physical activity participation. In R. K. Dishman (Ed.), *Advances in exercise adherence* (pp. 183-212). Champaign, IL: Human Kinetics.

King, A. C. (2001). Interventions to promote physical activity by older adults. *Journals of Gerontology: Biological Sciences and Medical Sciences, 56,* 36-46.

King, A. C., Kiernan, M., Oman, R. F., Kraemer, H. C., Hull, M., & Ahn, D. (1997). Can we identify who will adhere to long-term physical activity? Signal detection methodology as a potential aid to clinical decision making. *Health Psychology, 16,* 380-389.

King, A. C., Taylor, B. C., & Haskell, W. L. (1993). Effects of differing intensities and formats of 12 months of exercise training on psychological outcomes in older adults. *Health Psychology, 12,* 292-300.

Knox, M., Funk, J., Elliott, R., & Bush, E. G. (1998). Adolescents' possible selves and their relationship to global self-esteem. *Sex Roles, 39,* 61-80.

Koestner, R., & McClelland, D. C. (1990). Perspectives on competence motivation. In L. A. Pervin (Ed.), *Handbook of personality: Theory and research* (pp. 527-548). New York, NY: Guilford Press.

Koivula, N. (1999). Sport participation: Differences in motivation and actual participation due to gender typing. *Journal of Sport Behavior, 22,* 545-557.

Kyllo, L. B., & Landers, D. M. (1995). Goal setting in sport and exercise: A research synthesis to resolve the controversy. *Journal of Sport and Exercise Psychology, 17,* 117-137.

Lee, C. (1988). The relationship between goal setting, self-efficacy, and female field hockey team performance. *International Journal of Sport Psychology, 20,* 147-161.

Lee, J. Y., Jensen, B. E., Oberman, A., Fletcher, G. F., Fletcher, B. J., & Raczynski, J. M. (1996). Adherence in the training levels comparison trial. *Medicine and Science in Sports and Exercise, 28,* 47-52.

Lee, S. J., & Oyserman, D. (2009). Possible selves theory. In E. Anderman & L. Anderman (Eds.), *Psychology of classroom learning: An encyclopedia.* Detroit, MI: Macmillan Reference USA.

Leondari, A., Syngollitou, E., & Kiosseoglou, G. (1998). Academic achievement, motivation and possible selves. *Journal of Adolescence, 21,* 219-222.

Leventhal, H., & Hirschman, R. S. (1982). Social psychology and prevention. In G. S. Sanders & J. Suls (Eds.), *Social psychology of health and illness* (pp. 183-226). Hillsdale, NJ: Lawrence Erlbaum.

Locke, E. A., Frederick, E., Lee, C., & Bobko, P. (1984). Effect of self-efficacy, goals, and task strategies on task performance. *Journal of Applied Psychology, 69,* 241-251.

Locke, E. A., & Latham, G. P. (1985). The application of goal setting to sports. *Journal of Sport Psychology, 7,* 205-222.

Locke, E. A., & Latham, G. P. (1990). *A theory of goal setting and task performance*. Englewood Cliffs, NJ: Prentice Hall.

Locke, E. A., & Latham, G. P. (2002). Building a practically useful theory of goal setting and task motivation: a 35-year odyssey. *American Psychologist, 57,* 705-717.

Locke, E. A., Shaw, K. N., Saari, L. M., & Latham, G. P. (1981). Goal setting and task performance: 1969-1980. *Psychological Bulletin, 90,* 125-152.

Lorig, K. R., & Holman, H. R. (2003). Self-management education: history, definition, outcomes, and mechanisms. *Annals of Behavioral Medicine, 26,* 1-7.

Lowry, R., Galuska, D. A., Fulton, J. E., Wechsler, H., Kann, L., & Collins, J. L. (2000). Physical activity, food choice, and weight management goals and practices among U.S. college students. *American Journal of Preventive Medicine, 18,* 18-27.

Lox, C. L., Martin, K. A., & Petruzzello, S. J. (2003). *The psychology of exercise: Integrating theory and practice.* Scottsdale, AZ: Holcomb Hathaway.

Lutz, R. S., Lochbaum, M., & Turnbow, K. (2003). The role of autonomy in post-exercise affect responding. *Journal of Sport Behavior, 26,* 137-154.

Lynch, W. D., Golaszewski, T. J., Clearie, A. F., Snow, D., & Vickery, D. M. (1990). Impact of a facility based corporate fitness program on the number of absences from work due to illness. *Journal of Occupational Medicine, 32,* 9-12.

Maddux, J. E. (1996, June). *The role of cognitions in physical activity.* Keynote address at the meeting of the North American Society of Sport Psychology for Sport and Physical Activity, Muskoka, Ontario, Cananda.

Maddux, J. E., Brawley, L. R., & Boykin, A. (1995). Self-efficacy and social cognitive models of health behavior. In J. E. Maddux (Ed.), *Self-efficacy, adaptation, and adjustment: Theory, research and application* (pp. 173-202). New York, NY: Plenum.

Maltby, J., & Day, L. (2001). The relationship between exercise motives and psychological well-being. *The Journal of Psychology, 135,* 651-660.

Marcus, B. H., Dubbert, P. M., Forsyth, L.H., McKenzie, T. L., Stone, E. J., Dunn, A. L., & Blair, S. N. (2000). Physical activity behavior change: Issues in adoption and maintenance. *Health Psychology, 19,* 32-41.

Marcus, B. H., Dubbert, P. M., King, A.C., & Pinto, B. M. (1995). Physical activity in women: Current status and future directions. In A. Stanton & S. Gallant (Eds.), *The Psychology of Women's Health* (pp. 349-379). Washington, DC: American Psychological Association.

Marcus, B. H., & Simkin, L. R. (1994). The trans-theoretical model: Applications to exercise behavior. *Medicine and Science in Sports and Exercise, 26,* 1400-1404.

Markus, H. (1977). Self-schemata and processing information about the self. *Social Psychology, 35,* 63-78.

Markus, H., Crane, M., Berstein, S., & Siladi, M. (1982). Self-schemas and gender. *Journal of Personality and Social Psychology, 42,* 38-50.

Markus, H., Cross, S., & Wurf, E. (1990). The role of the self-system in competence. In R. J. Sternberg & J, Kolligan, Jr. (Eds.), *Competence considered* (pp. 205-225). New Haven, CT: Yale University Press.

Markus, H., Hamill, R., & Sentis, K. P. (1987). Thinking fat: Self-schematas for body weight and the processing of weight relevant information. *Journal of Applied Social Psychology, 17,* 50-71.

Markus, H., & Nurius, P. (1986). Possible Selves. *American Psychologist, 9,* 954-969.

Marshall, A. L., Owen, N., & Bauman, A. E. (2004). Mediated approaches for influencing physical activity: Update of the evidence on mass media, print, telephone and website delivery of interventions. *Journal of Science and Medicine in Sport, 7,* 74-80.

Martin, K., & Sinden, A. (2001). Who will stay and who will go? A review of older adults' adherence to randomized controlled trials of exercise. *Journal of Aging and Physical Activity, 9,* 91-114.

Matsumoto, H., & Tekenaka, K. (2004). Motivational profiles and stages of exercise behaviour change. *International Journal of Sport and Health Sciences, 2,* 89-96.

McAuley, E. (1991). Efficacy, attributional, and affective responses to exercise participation. *Journal of Sport and Exercise Psychology, 13,* 382-393.

McAuley, E. (1992). The role of efficacy cognitions in the prediction of exercise behavior in middle-aged adults. *Journal of Behavioral Medicine, 15,* 65-88.

McAuley, E., & Blissmer, B. (2000). Self-efficacy determinants and consequences of physical activity. *Exercise and Sport Sciences Reviews, 28,* 85-88.

McAuley, E., Courneya, K. S., Rudolf, D. L., & Lox, C. L. (1994). Enhancing exercise adherence in middle-aged males and females. *Preventive Medicine, 23,* 498-506.

McAuley, E., & Jacobson, L. (1991). Self-efficacy and exercise participation in sedentary adult females. *American Journal of Health Promotion, 5,* 185-192.

McAuley, E., & Rudolph, D. L. (1995). Physical activity, aging, and psychological well-being. *Journal of Aging and Physical Activity, 3,* 67-96.

Mento, A. J., Steel, R. P., & Karren, R. J. (1987). A meta-analytic study of the effects of goal setting on task performance: 1966-1984. *Organizational Behavior and Human Decision Processes, 39,* 52-83.

Mischel, W., Cantor, N., & Feldman, S. (1996). Principles of self-regulation: The nature of willpower and self-control. In E. T. Higgins & A. W. Kruglanski (Eds.), *Social psychology. Handbook of principles* (pp. 329-360). New York, NY: Guilford.

Morgan, W. P., & O'Connor, P. J. (1988). Exercise and mental health. In R. K. Dishman (Ed.), *Exercise adherence: Its impact on public health*. Champaign, IL: Human Kinetics Books.

Murru, E. C., & Martin Ginis, K. A. (2010). Imagining the possibilities: The effects of a possible selves intervention on self-regulatory efficacy and exercise behavior. *Journal of Sport and Exercise Psychology, 32*, 537-554.

Mutrie, N. (2000). The relationship between physical activity and clinically defined depression. In S. J. H. Biddle, K. R. Fox, & S. H. Boutcher (Eds.), *Physical activity and psychological well-being.* London: Routledge.

Nabetani, T., & Tokunaga, M. (2001). The effect of short-term (10-and 15-min) running at self-selected intensity on mood alteration. *Journal of Physiological Anthropology and Applied Human Science, 20,* 233-239.

O'Brien Cousins, S. (1996). Exercise cognition among elderly women. *Journal of Applied Sport Psychology, 8,* 131-145.

Oden, G., Crouse, S., & Reynolds, C. (1989). Worker productivity, job satisfaction, and work-related stress: The influence of an employee fitness program. *Fitness in Business, 3,* 198-204.

Ogilvie, D. M. (1987). Life satisfaction and identity structure in later middle-aged men and women. *Psychology and Aging, 2,* 217-224.

Oman, R., & McAuley, E. (1993). Intrinsic motivation and exercise behavior. *Journal of Health Education, 24,* 232-338.

Ory, M. G., & Cox, D. M. (1994). Forging ahead: Linking health and behavior to improve quality of life in older people. *Social Indicators Research, 33,* 89-120.

Ostrow, A. C. (1976). Goal-setting behavior and need achievement in relation to competitive motor activity. *The Research Quarterly, 47,* 174-183.

Ouellette, J. A., Hessling, R., Gibbons, F. X., Reis-Bergan, M., & Gerrard, M. (2005). Using images to increase exercise behavior: Prototypes versus possible selves. *Personality and Social Psychology Bulletin, 31,* 610-620.

Oyserman, D., Bybee, D., Terry, K., & Hart-Johnson, T. (2004). Possible selves as roadmaps. *Journal of Research in Personality, 38,* 130-149.

Oyserman, D., & Markus, H. (1990a). Possible selves and delinquency. *Journal of Personality and Social Psychology, 59,* 112-125.

Oyserman, D., & Markus, H. (1990b). Possible selves in balance: Implications for delinquency. *Journal of Social Issues, 46,* 141-157.

Parks, K. M., & Steelman, L. A. (2008). Organizational wellness programs: A meta-analysis. *Journal of Occupational Health Psychology, 13,* 58-68.

Pate, R. R., Pratt, M., Blair, S. N., Haskell, W. L., Macera, C. A., Bouchard, C., … Wilmore, J. H. (1995). Physical activity and public health: A recommendation from the Centers for Disease Control and Prevention and the American College of Sports Medicine. *Journal of the American Medical Association, 273,* 402-407.

Pelham, B. W. (1991). On confidence and consequence: The certainty and importance of self-knowledge. *Journal of Personality and Social Psychology, 60,* 518-530.

Pelletier, L. G., Fortier, M. S., Vallerand, R. J., & Briere, N. M. (2001). Associations among perceived autonomy support, forms of self-regulation, and persistence: A prospective study. *Motivation and Emotion, 25,* 279-306.

Pelletier, L. G., Fortier, M. S., Vallerand, R. J., Tuson, K. M., Briere, N. M., & Blais, M. R. (1995). Toward a new measure of intrinsic motivation, extrinsic motivation, and amotivation in sports: The Sport Motivation Scale (SMS). *Journal of Sport and Exercise Psychology, 17,* 35-53.

Petosa, R. L., Sminski, R., & Hortz, B. (2003). Predicting vigorous physical activity using social cognitive theory. *American Journal of Health Behavior, 27,* 301-310.

Petruzzello, S. J., & Tate, A. K. (1997). Brain activation, affect, and aerobic exercise: An examination of both state-independent and state-dependent relationships. *Psychophysiology, 34,* 527-533.

Phillips, E. M., Schnider, J. C., & Mercer, G. R. (2004). Motivating elders to initiate and maintain exercise. *American Academy of Physical Medicine and Rehabilitation, 85,* 52-57.

Plante, T. G., Gores, C., Brecht, C., Carrow, J., Imbs, A., & Willemsen, E. (2007). Does exercise environment enhance the psychological benefits of exercise for women? *International Journal of Stress Management, 14,* 88-98.

Poag, K., & McAuley, E. (1992). Goal setting, self-efficacy, and exercise behavior. *Journal of Sport and Exercise Psychology, 14,* 352-360.

Pritchard, J., Nowson, C., & Wark, J. (1997). A worksite program for overweight middle-aged men achieves lesser weight loss with exercise than with dietary change. *Journal of the American Dietetic Association, 97,* 37-42.

Regin, C. (1987). What the benefits industry is saying about fitness and health promotion. *Fitness in Business, 1,* 209-215.

Resnick, B., & Spellbring, A. M. (2000). Understanding what motivates older adults to exercise. *Journal of Gerontological Nursing, 26,* 34-42.

Robison, J. I., & Rogers, M. A. (1994). Adherence to exercise programs: Recommendations. *Sports Medicine, 17,* 39-52.

Rodgers, W. M., & Sullivan, M. J. (2001). Task, coping, and scheduling self-efficacy in relation to frequency of physical activity. *Journal of Applied Social Psychology, 31,* 741-753.

Rothman, A. J., Baldwin, A. S., & Hertel, A. W. (2004). Self-regulation and behavior change. In R. F. Baumeister & K. D. Vohs (Eds.), *Handbook of self-regulation. Research, theory, and applications* (pp. 130-148). New York, NY: Guilford.

Rovniak, L. S., Anderson, E. S., Winett, R. A., & Stephens, R. S. (2002). Social cognitive determinants of physical activity in young adults: A prospective structural equation analysis. *Annals of Behavioral Medicine, 24,* 149-156.

Rudolph, D. L., & McAuley, E. (1996). Self-efficacy and perceptions of effort. *Journal of Sport and Exercise Psychology, 18,* 216-223.

Ruvolo, A., & Markus, H. (1992). Possible selves and performance: The power of self-relevant imagery. *Social Cognition, 10,* 95-124.

Ryan, R. M., Frederick, C. M., Lepes, D., Rubio, N., & Sheldon, K. M. (1997). Intrinsic motivation and exercise adherence. *International Journal of Sport Psychology, 28,* 335-354.

Ryff, C. D. (1991). Possible selves in adulthood and old age: A tale of shifting horizons. *Psychology and Aging, 6,* 286-295.

Sallis, J. F., & Owen, N. (1999). *Physical activity and behavioral medicine.* Thousand Oaks, CA: Sage.

Salmon, P. (2000). Effects of physical exercise on anxiety, depression, and sensitivity to stress: A unifying theory. *Clinical Exercise Review, 21,* 33-61.

Schaie, K. W., Leventhal, H., & Willis, S. L. (2002). *Effective health behavior in older adults: Societal impact on aging.* New York: Springer.

Schoenborn, C. A., Adams, P. F., Barnes, P. M., Vickerie, J. L., & Schiller, J. S. (2004). Health behaviors of adults: United States, 1999-2001. National Center for Health Statistics. *Vital Health Statistics, 10,* 1-79.

Schunk, D. H. (1984). Self-efficacy perspective on achievement behavior. *Educational Psychologist, 19,* 48-58.

Schunk, D. H. (1994). Self-regulation of self-efficacy and attributions in academic settings. In D. H. Schunk & B. J. Zimmerma (Eds.), *Self-regulation of learning and performance: Issues and educational implications* (pp. 25-44). Hillsdale, NJ: Lawrence Erlbaum Associates.

Schunk, D. H. (1995). Self-efficacy and education and instruction. In J. E. Maddux (Ed.), *Self-efficacy, adaptation, and adjustment: Theory, research, and application* (pp. 281-303). New York, NY: Plenum Press.

Schunk, D. H. (2001). Self-regulation through goal setting. *ERIC Document Reproduction Service,* 4.

Sears, S. R., & Stanton, A. L. (2001). Expectancy-value constructs and expectancy violation as predictors of exercise adherence in previously sedentary women. *Health Psychology, 20,* 326-333.

Sebire, S. J., Standage, M., & Vansteenkiste, M. (2009). Examining intrinsic versus extrinsic exercise goals: Cognitive, affective, and behavioral outcomes. *Journal of Sport and Exercise Psychology, 31,* 189-210.

Segar, M. L., Eccles, J. S., Peck, S. C., & Richardson, C. R. (2007). Midlife women's physical activity goals: Sociocultural influences and effects on behavioral regulation. *Sex Roles, 57,* 837-849.

Sharkey, B. J. (1986). Functional versus chronologic age. *Medicine and Science in Sports and Exercise, 19,* 174-177.

Shepard, R. (1983). Employee fitness and health: The state of the art (Canadian employee fitness and lifestyle project). *Preventative Medicine, 12,* 644-653.

Shephard, R. J. (1996). Worksite fitness and exercise programs: A review of methodology and health impact. *American Journal of Health Promotion, 10,* 436-452.

Simkin, L. R., & Gross, A. M. (1994). Assessment of coping with high-risk situations for exercise relapse among healthy women. *Health Psychology, 13,* 274-277.

Smith, J. A., Hauenstein, N. M. A., & Buchana, L. B. (1996). Goal setting and exercise performance. *Human Performance, 9,* 141-154.

Song, T. K., Shephard, R. J., & Cox, M. (1982). Absenteeism, employee turnover, and sustained exercise participation. *Journal of Sports Medicine and Physical Fitness, 22,* 392-399.

Stambor, Z. (2006). Employees: A company's best asset. *Monitor on Psychology, 37,* 28-30.

Strelan, P., Mehaffey, S., & Tiggemann, M. (2003). Self-objectification and esteem in young women: The mediating rols of reasons for exercise. *Sex Roles, 48,* 89-95.

Taylor, A. H. (2000). Physical activity, anxiety, and stress. In S. J. H. Biddle, K. R. Fox, & S. H. Boutcher (Eds.), *Physical activity and psychological well-being.* London, UK: Routledge.

Taylor, S., Neter, E., & Wayment, H. (1995). Self-evaluation processes. *Personality and Social Psychology Bulletin, 21,* 1278-1287.

Timperio, A., Salmon, J., & Ball, K. (2004). Evidence-based strategies to promote physical activity in the workplace. *Journal of Science and Medicine in Sport, 7,* 60-66.

Tu, W., Stump, T. E., Damush, T. M., & Clark, D. O. (2004). The effects of health and environment on exercise-class participation in older, urban women. *Journal of Aging and Physical Activity, 12,* 480-496.

Tubbs, M. E. (1986). Goal setting: A meta-analytic examination of the empirical evidence. *Journal of Applied Psychology, 71,* 474-483.

U.S. Department of Health and Human Services (1991). *Promoting physical activity among adults: A CDC community intervention handbook.* Atlanta, GA: U.S. Government Printing Office.

U.S. Department of Health and Human Services (1996). *Physical activity and health: A report of the Surgeon General.* Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion.

U.S. Department of Health and Human Services. (1999). *Surgeon General's report on physical activity and health.* Pittsburgh, PA: Surgeon General.

U.S. Department of Health and Human Services. (2001a). *Healthy people 2010* (2nd ed.). Washington, DC: U.S. Government Printing Office.

U.S. Department of Health and Human Services. (2001b). *The Surgeon General's call to action to prevent overweight and obesity.* Rockville, MD: Department of Health and Human Services, Office of the Surgeon General.

U.S. Department of Health and Human Services (2003). *Prevention makes common "cents."* Retrieved from U.S. Department of Health and Human Services website: http://aspe.hhs.gov/health/prevention/

U. S. Department of Health and Human Services (2008). *Physical Activity Guidelines for Americans.* Retrieved from U. S. Department of Health and Human Services website: http://health.gov/paguidelines/

U.S. Department of Health and Human Services. (2010). *Summary health statistics for U.S. adults: National Health Interview Survey, 2009.* Hyattsville, MD: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Health Statistics.

Van Beijsterveldt, C., Van Boxtel, M., Bosma, H., Houx, P., Buntinx, F., & Jolles, J. (2002). Predictors of attrition in a longitudinal cognitive aging study: The Maastricht Aging Study (MAAS). *Journal of Clinical Epidemiology, 55*, 216-223.

Vansteenkiste, M., Lens, W., & Deci, E. L. (2006). Intrinsic versus extrinsic goal-contents in self-determination theory: Another look at the quality of academic motivation. *Educational Psychologist, 41,* 19-31.

Vansteenkiste, M., Simons, J., Soenens, B., & Lens, W. (2004). How to become a persevering exerciser: The importance of providing a clear, future goal in an autonomy-supportive way. *Journal of Sport and Exercise Psychology, 26,* 232-249.

Vohs, K. D., & Baumeister, R. F. (2004). Understanding self-regulation: An introduction. In R. F. Baumeister & K. D. Vohs (Eds.), *Handbook of self-regulation. Research, theory, and applications* (pp. 1-9). New York, NY: Guilford.

Von Ah, D., Ebert, S., Ngamvitroj, A., Park, N., & Kang, D. H. (2004). Predictors of health behaviors in college students. *Journal of Advanced Nursing, 48,* 463-474.

Wankel, L. M. (1993). The importance of enjoyment to adherence and psychological benefits from physical activity. *International Journal of Sport Psychology, 24,* 151-169.

Weinberg, R. (1992). Goal-setting and motor performance: A review and critique. In G. C. Roberts (Ed.), *Motivation in sport and exercise* (pp. 177-197). Champaign, IL: Human Kinetics.

Weinberg, R. (1994). Goal setting and performance in sport and exercise settings: A synthesis and critique. *Medicine and Science in Sports and Exercise, 26,* 469-477.

Weinburg, R., Bruya, L., & Jackson, A. (1985). The effect of goal proximity and goals specificity on endurance performance. *Journal of Sport Psychology, 7,* 296-305.

Weinberg, R., & Weigand, D. (1993). Goal setting in sport and exercise: A reaction to Locke. *Journal of Sport and Exercise Psychology, 15,* 88-96.

Whaley, D. E. (2003). Future-oriented self-perceptions and exercise behavior in middle-aged women. *Journal of Aging and Physical Activity, 11,* 1-17.

Whaley, D. E., & Schrider, A. F. (2005). The process of adult exercise adherence: Self-perceptions and competence. *The Sport Psychologist, 19,* 148-163.

Winninger, S. R. (2007). Self-determination theory and exercise behavior: An examination of the psychometric properties of the Exercise Motivation Scale. *Journal of Applied Sport Psychology, 19,* 471-486.

Wolf, A. M., & Colditz, G. A. (1998). Current estimates of the economic cost of obesity in the United States. *Obesity Research, 6,* 97-106.

Wolfe, R., Parker, D., & Napier, N. (1994). Employee health management and organizational performance. *Journal of Applied Behavioral Science, 30,* 22-42.

Wood, R. E., & Bandura, A. (1989). Impact of conceptions of ability on self-regulatory mechanisms and complex decision making. *Journal of Personality and Social Psychology, 56,* 407-415.

Wood, R. E., Bandura, A., & Bailey, T. (1990). Mechanisms governing organizational performance in complex decision-making environments. *Organizational Behavior and Human Decision Processes, 46,* 181-201.

Wood, R. E., & Locke, E. A. (1987). The relation of self-efficacy and grade goals to academic performance. *Educational and Psychological Measurement, 47,* 1013-1024.

Wood, R. E., Mento, A. J., & Locke, E. A. (1987). Task complexity as a moderator of goal effects: A meta-analysis. *Journal of Applied Psychology, 72,* 416-425.

Wurtele, S. K. (1986). Self-efficacy and athletic performance: A review. *Journal of Social and Clinical Psychology, 4,* 290-301.

Yin, Z., & Boyd, M. P. (2000). Behavioral and cognitive correlates of exercise self-schemata. *The Journal of Psychology, 134,* 269-282.

Yukl, G. A., & Latham, G. P. (1978). Interrelationships among employee participation, individual differences, goal difficulty, goal acceptance, goal instrumentality, and performance. *Personnel Psychology, 31,* 305-324.

Zeidner, M., Boekaerts, M., & Pintrich, P.R. (2000). Self-regulation: Directions and challenges for future research. In M. Boekaerts, P. R. Pintrich, & M. Zeidner (Eds.), *Handbook of self-regulation* (pp. 750-768). San Diego, CA: Academic Press.

Zimmerman, B. J. (1989). A social cognitive view of self-regulated academic learning. *Journal of Educational Psychology, 81,* 329-339.

Zimmerman, B. J. (2000). Attaining self-regulation: A social cognitive perspective. In M. Boekaerts, P. R. Pintrich, & M. Zeidner (Eds.), *Handbook of self-regulation* (pp. 13-39). San Diego, CA: Academic Press.

Appendix A
Wellness Announcement: Recruitment of Participants

Registration for the Fall 2003 Employee Wellness Institute is now available via the ECU OneStop. Please log on to http://www.onestop.ecu.edu for a full class description and/or to register for the class. Please note that you must receive prior approval from your supervisor to enroll in the class. If you are a supervisor of an individual or if you know of an individual who may not be receiving this message at this time please share this information with them. Your assistance in communicating this information is greatly appreciated!

Thanks!

Instructions for registration are listed below:

1. Be sure you are on the Tools tab of OneStop
2. Under the Employee section click on Faculty and Staff Training.
3. Select a course from the list to view details about it.
4. To register for a class, click the radio button in the Add column and hit the Enroll button.
5. You will receive a confirmation e-mail after you have successfully registered for the class.

Catrina Davis
East Carolina University
Department of Human Resources
Staff Training and Development Specialist

Appendix B
Informed Consent Document

Title of Proposal: Measuring the Effectiveness of a University Wellness Program on Employee Stress and Personal Goals

Principal Investigator: Beverly Harju, Ph.D.
Institution East Carolina University
Address Psychology Department, Rawl 104
Telephone # (252) 756 – 7151

VOLUNTARY PARTICIPATION:

This research is designed to measure the effectiveness of a wellness program on improving wellness attitudes. Fifteen to 25 employees of East Carolina University will be included in the study. I understand that my participation in this pre and post study is voluntary. Refusal to participate will involve no penalty or loss of benefits to which I am otherwise entitled. Furthermore, I may stop participating at any time I choose without penalty or loss of benefits at this institution.

PLAN AND PROCEDURES:

For nine weeks, I will participate in a wellness session each Wednesday from 2 – 4:30 p.m. During the second session, I will be given a short pre test to fill out regarding my stress and wellness goals. Once the nine sessions are complete, I will use the pre test forms to rate my level of success in meeting my goals and will fill out a second stress test.

POTENTIAL BENEFITS AND COSTS:

By participating in this study, I will receive a free nine-week wellness program designed to decrease stress and improve quality of life. I will continue to earn salary while attending the program. Risks are minimal relative to the benefits of gaining knowledge with respect to the relationships of stress, quality of life, and health. Results also will help determine the program's overall effectiveness in terms of physiological and psychological stress reduction, understanding of wellness, and improved quality of life. Areas for improvement will be noted and incorporated into continuous program evaluation.

PERSONS TO CONTACT WITH QUESTIONS

The investigator will be available to answer any questions concerning this research, now or in the future. I may contact Dr. Beverly Harju at (252) 328 – 1377 (Mon – Fri) or at nights and on weekends at (252) 756 – 2856. Also, if questions arise about my rights as a research participant, I may contact the Chairman of the University Policy and Review committee on Human Research at (252) 847-2914 (days) and/or the hospital Risk Management Office at (252) 847 – 5592.

CONSENT TO PARTICIPATE

I certify that I have read all of the above, asked questions and received answers concerning areas I did not understand, and have received satisfactory answers to these questions. I willingly give my consent for participation in this research study. (A copy of this consent form will be given to you as the participant.)

_____

Participant's Name (**PRINT**)

_____

Signature of Participant Date

_____

Research witness or Principal Investigator's Name (**PRINT**)

_____

Signature of Principal Investigator Date

Appendix C
Pre-Test Survey Measure

Wellness Institute
Pre Test
Beverly Harju, Ph.D.

Introduction

Testing will provide some answers:

1. How you hope to change during this Wellness Course?

You will spell out your personal starting point today. Later you will rate your personal progress.

2. Is this course Effective?

Pre and Post testing will evaluate, improve and justify having a Wellness Institute. This is your way of protecting and supporting the program.

3. What do people who participate in a wellness program want? Do they improve?

The data provided may be published. Your confidentiality is carefully guarded for your privacy and for research ethics. You may ask for a copy of your results and the group's results after your course is completed.

Directions

1. Choose a familiar name [maybe a relative or friend or pet] you can remember so that you can use it now and recognize your booklet when you do the Post Testing. Write your code name in your folder.
2. Turn the page and complete the stress test.
3. On pages 3- 8 ,write down whatever personal goals come to your mind. Don't worry about giving the best answers. Everyone will have somewhat wellness different goals they want to do and also to avoid doing.

Please complete all pages on both front and back.

Self-knowledge gives you the power to be, and the power to change.

Code Name _____

Sex ____ Age ____ Ethnicity _____

Stress Test

Below are twenty statements. Please rate each using the following scale:

0 ---------- 1 ---------- 2 ---------- 3 ---------- 4

None of the time	**A little bit**	**Some of the time**	**Good part**	**Most or all of the time**

Please rate how much you have felt this way in the past month. Record your rating in the space to the left of each item.

___ 1. I feel more nervous and anxious than usual.
___ 2. I feel afraid for no reason at all.
___ 3. I get upset easily or feel panicky.
___ 4. I feel like I'm falling apart and going to pieces.
___ 5. I feel that everything is all right and nothing bad will happen.
___ 6. My arms and legs shake and tremble.
___ 7. I am bothered by headaches, neck, and back pains.
___ 8. I feel weak and get tired easily.
___ 9. I feel calm and can sit still easily.
___ 10. I can feel my heart beating fast.
___ 11. I am bothered by dizzy spells.
___ 12. I have fainting spells or feel like it.
___ 13. I can breathe in and out easily.
___ 14. I get feelings of numbness and tingling in my fingers and toes.
___ 15. I am bothered by stomach aches or indigestion.
___ 16. I have to empty my bladder often.
___ 17. My hands are usually dry and warm.
___ 18. My face gets hot and blushes.
___ 19. I fall asleep easily and get a good night's rest.
___ 20. I have nightmares.

1A. Desirable Exercise Goals **Code Name _____**

Think about how you hope to be during the next 3 months in terms of your exercise goals. You might want to change your attitudes, workout more, or be more physically active in general. These goals may be ways you plan to continue being or ways you plan to improve.

In order to improve my exercise patterns over the next 3 months:

I hope to be _____

I hope to learn to _____

I hope to think or feel _____

I hope to have these habits _____

1. Why are these exercise goals important to you?

_____

_____

Please answer the next questions by circling a number from 1 to 7 on the scale that best describes you.

2. How much do you already have these desired habits? -	1	2	3	4	5	6	7
	Never like this			Sometimes			Very often like this
3. How important is it to you to become this way?	1	2	3	4	5	6	7
	Not at all important			Somewhat			Very important
4. How capable are you of changing/improving?	1	2	3	4	5	6	7
	Not at all capable			Somewhat			Very capable
5. How likely are you to improve in some ways?	1	2	3	4	5	6	7
	Not at all likely			Somewhat			Very likely
6. Were you active as a teen or young adult?	1	2	3	4	5	6	7
	Inactive			Active			Very Active

1B. Undesirable Exercise Patterns

Now, think about ways that you don't want to feel or act during the next 3 months in terms of exercise. These are ways you don't want to be, or prevent from happening.

In order to manage my undesirable exercise patterns over the next 3 months,

I want to:

Avoid being _____

Avoid thinking / feeling _____

Avoid these habits _____

1. Why are these undesirable patterns a concern to you?

_____

_____

2. To what extent do you have these undesirable habits now? 1 2 3 4 5 6 7
- Never like this — Sometimes — Very often like this

3. How important is it for you to avoid being this way? 1 2 3 4 5 6 7
Not at all important — Somewhat — Very important

4. How capable do you feel of avoiding these? 1 2 3 4 5 6 7
Not at all capable — Somewhat — Very capable

5. How likely are you to prevent these patterns? 1 2 3 4 5 6 7
Not at all likely — Somewhat — Very likely

6. Did you dislike exercise as a teen/young adult? 1 2 3 4 5 6 7
Never Disliked — Somewhat — Very much Disliked

2A. Desirable Eating and Nutrition Goals

Think about the next 3 months and how you hope to manage your eating patterns. This may be ways you plan to continue being or ways you plan to improve.

In order to manage my eating patterns over the next 3 months:

I hope to be _____

I hope to learn _____

I hope to think/feel _____

I hope to have these habits _____

_____

1. Why are these nutrition goals important to you?

_____

_____

2. To what extent do you already have these habits? 1 2 3 4 5 6 7
-
Never like this — Sometimes — Very often like this

3. How important is it to you to become this way? 1 2 3 4 5 6 7
Not at all important — Somewhat important — Very important

4. How capable are you of changing/improving? 1 2 3 4 5 6 7
Not at all capable — Somewhat capable — Very capable

5. How likely are you to improve to some degree? 1 2 3 4 5 6 7
Not at all likely — Somewhat likely — Very likely

6. Did you like your eating habits as a teen/young adult? 1 2 3 4 5 6 7
Never — Sometimes — Always

2B. Undesirable Eating Patterns

Now think about what you don't want to do in terms of your eating habits during the next 3 months.

Over the next 3 months in terms of my eating or nutritional patterns,

I want to:

Avoid being _____

Avoid thinking/feeling _____

Avoid these habits _____

1. Why are these undesirable habits a concern to you?

_____

_____

2. To what extent do you have these undesirable habits? 1 2 3 4 5 6 7
-
Never like this — Sometimes — Very often like this

3. How important is it to you to avoid being this way? 1 2 3 4 5 6 7
Not at all important — Somewhat important — Very important

4. How capable do you feel of preventing this? 1 2 3 4 5 6 7
Not at all capable — Somewhat capable — Very capable

5. How likely is it that you will prevent this? 1 2 3 4 5 6 7
Not at all likely — Somewhat likely — Very likely

3A. Desirable Emotional Goals

Think about how you hope to be during the next 3 months in terms of managing your emotions. This may be ways you plan to continue being or ways you plan to improve.

In order to have more positive moods and feelings in the next 3 months:

I hope to be _____

I hope to learn _____

I hope to think or feel _____

I hope to have these habits _____

1. Why are these emotions important to you?

_____

_____

2. To what extent do you have these habits now? 1 2 3 4 5 6 7
-
Never like this — Sometimes — Very often like this

3. How important is it to you to be these ways? 1 2 3 4 5 6 7
Not at all important — Somewhat — Very important

4. How capable are you of changing/improving? 1 2 3 4 5 6 7
Not at all capable — Somewhat — Very capable

5. How likely are you to improve in some ways? 1 2 3 4 5 6 7
Not at all likely — Somewhat — Very likely

2B. Undesirable Emotional Patterns

Now, think about ways you don't want to feel or don't want to act in the next 3 months in terms of distressing emotions such as stress, anxiety, anger, sadness, lonliness or helplessness.

In order to manage my moods and feelings in the next 3 months,

I want to:

Avoid being _____

Avoid thinking/feeling _____

Avoid these habits _____

1. Why are these emotional patterns a concern to you?

_____

_____

2. To what extent do you have these undesirable patterns now? 1 2 3 4 5 6 7
- Never like this — Sometimes — Very often like this

3. How important is it for you to avoid these patterns? 1 2 3 4 5 6 7
Not at all important — Somewhat important — Very important

4. How capable do you feel of avoiding these? 1 2 3 4 5 6 7
Not at all capable — Somewhat capable — Very capable

5. How likely are you to prevent these patterns? 1 2 3 4 5 6 7
Not at all likely — Somewhat likely — Very likely

Please note: During week 9, you will be given the short Post test. You will only have to complete the stress test again and rate the goals you wrote down.

Thank you very much for completing this goals questionnaire.

Appendix D
Example Syllabi (Fall 2005)

SYLLABUS: ECU EMPLOYEE WELLNESS INSTITUTE

FALL 2005

TUESDAYS, SRC CLASSROOM

September 13, 2005 **2:00 – 4:30 PM**	Topic: **Introduction & Overview** • Wellness Concept • Wellness Wheel and goal setting • Special Guest: Lola Thompson (4:15-4:30) Presenter(s): Human Resources & Karen Warren Location: SRC Classroom
September 20, 2005 **2:00 – 5:00 PM**	Topic: **Fitness** • Components of fitness • Explanation of fitness assessment • Motivation to get active • Activity vs. Exercise • Personal action plans & goals • Stress Test Pre-test ~ Bev Harju (4:30-5:00 PM) Presenter(s): Sam Combs & Suzanne McDonald Location: SRC Classroom
September 27, 2005 **2:00 – 4:30 PM**	Topic: **Nutrition** • Overview of healthy eating • Discovering balance with food portions • Understanding how to make healthy food choices • How to be a supermarket sleuth Presenter(s): Tara Barber & Karen Warren Location: SRC Classroom
October 4, 2005 **2:00-4:30 PM**	***Location:*** ***SRC Classroom Topic:*** **Self-Discovery/True Colors** • Exploring your personal awareness, personal relationships, life perspective & sense of humor • Understanding what inspires & nurtures you

	Presenter: Nancy Mize Location: SRC Classroom
October 11, 2005 **2:00 – 4:30 PM**	Topic: **Eveready Wellness: This will RECHARGE You** • Experiencing your thoughts & creativity • Sense of humor • Realizing & tapping into your own creativity Presenter: Stephen Gray Location: SRC Classroom
October 18, 2005 **2:00 – 4:30 PM**	Topic: **Intellectual Wellness: A Healthy Mind** • Nurturing intellectual stimulation • Creative problem solving Presenter: Beth Velde Location: SRC Classroom
October 25, 2005 **2:00 – 4:30 PM**	***Topic*: Job Satisfaction *and Financial Wellness*** • Planning career path & development • Enhancing current job & improving satisfaction • Matching your passion with your work Presenter: Catrina Davis Len Rhodes Location: SRC Classroom
November 1, 2005 **2:00 – 4:30 PM**	**Optional Class Day ~ SRC Orientation & Tour**
November 8, 2005 **2:00 – 4:30 PM**	Topic: **Stress Management** • Stress symptoms and outcomes • Making the mind/body connection • Common characteristics of work stress • Relaxation and biofeedback techniques • Bev Harju 3:45-4:15 (Post Stress Test Assessment)

	Presenter: Georgia Childs & Rebecca Allen Location: SRC Classroom
November 15, 2005 **2:00-4:30 PM**	Topic: **Celebration: Summary Action Plans & Reunion** Presenter(s): Various Wellness Institute Staff Location: SRC Classroom

Appendix E
Post-Test Survey Measure

Code Name _____

Please complete the Post test. This will provide your answers to the following areas:

1. My progress in achieving my personal goals
2. The effectiveness of this Wellness course
3. What can be gained from participating in a wellness program

Directions

Please fill out the stress test again.

Read the exercise, nutrition and emotional goals you provided before and then simply rate them again.

Self-knowledge gives you the power to be, and the power to change.

Thank you, in advance, for your participation.

Stress Test

Below are twenty statements. Please rate each using the following scale:

0 ---------- 1 ---------- 2 ---------- 3 ---------- 4

None of the time	**A little bit**	**Some of the time**	**Good part**	**Most or all of the time**

Please rate how much you have felt this way in the past month. Record your rating in the space to the left of each item.

___ 1. I feel more nervous and anxious than usual.
___ 2. I feel afraid for no reason at all.
___ 3. I get upset easily or feel panicky.
___ 4. I feel like I'm falling apart and going to pieces.
___ 5. I feel that everything is all right and nothing bad will happen.
___ 6. My arms and legs shake and tremble.
___ 7. I am bothered by headaches, neck, and back pains.
___ 8. I feel weak and get tired easily.
___ 9. I feel calm and can sit still easily.
___ 10. I can feel my heart beating fast.
___ 11. I am bothered by dizzy spells.
___ 12. I have fainting spells or feel like it.
___ 13. I can breathe in and out easily.
___ 14. I get feelings of numbness and tingling in my fingers and toes.
___ 15. I am bothered by stomach aches or indigestion.
___ 16. I have to empty my bladder often.
___ 17. My hands are usually dry and warm.
___ 18. My face gets hot and blushes.
___ 19. I fall asleep easily and get a good night's rest.
___ 20. I have nightmares.
____21. My current work and personal pressures are greater than they were during the Pre Testing.
____22. This course has improved my ability to reduce stress

1A. Exercise Goals **Code Name _____**

On the pre test you described your exercise goals as follows.

Paste the written answers from their pre test here

Please rate the following items again. Circle a number from 1 to 7 on the scale that best describes you.

2. How much do you have these desired habits? 1 2 3 4 5 6 7
-
Never like this — Sometimes — Very often like this

3. How important is it to you to be this way now? 1 2 3 4 5 6 7
Not at all important — Somewhat — Very important

4. How capable are you of continuing to improve? 1 2 3 4 5 6 7
Not at all capable — Somewhat — Very capable

5. How likely are you to continue improving? 1 2 3 4 5 6 7
Not at all likely — Somewhat — Very likely

6. How successful have you been in improving your exercise habits? 1 2 3 4 5 6 7
Not Successful — Some — Very Successful

1B. Undesirable Exercise Patterns

On the pre test you described your undesirable exercise patterns as follows.

Paste the written answers from their pre test here

Please rate the following items one more time.

2. Do you have these undesirable habits now? 1 2 3 4 5 6 7
-
Never like this — Sometimes — Very often like this

3. How important is it for you to continue avoiding this? 1 2 3 4 5 6 7
Not at all important — Somewhat — Very important

4. How capable do you feel of continuing to avoid these? 1 2 3 4 5 6 7
Not at all capable — Somewhat — Very capable

5. How likely are you to prevent these patterns? 1 2 3 4 5 6 7
Not at all likely — Somewhat — Very likely

6. How successfully have you avoided these patterns? 1 2 3 4 5 6 7
Not Successful — Some — Entirely Successful

2A. Eating and Nutrition Goals

On the pre test you described the goals you had for your eating habits as follows.

Paste the written answers from their pre test here _____

Please rate the following items one more time.

2. To what extent do you now practice these habits? -	1 2 3 4 5 6 7 Never like this Sometimes Very often like this
3. How important is it to you to be this way now?	1 2 3 4 5 6 7 Not at all important Somewhat Very important
4. How capable are you of continuing to improve?	1 2 3 4 5 6 7 Not at all capable Somewhat Very capable
5. How likely are you to continue improving?	1 2 3 4 5 6 7 Not at all likely Somewhat Very likely
6. How successful have you been in improving your eating habits?	1 2 3 4 5 6 7 Not Successful Some Very Successful

2B. Undesirable Eating and Nutritional Patterns

On the pre test you described your undesirable eating patterns as follows.

Paste the written answers from their pre test

Please rate the following items one more time.

2. To what extent do you have these undesirable habits? 1 2 3 4 5 6 7
-
Never like this — Sometimes — Very often like this

3. How important is it for you to continue avoiding this? 1 2 3 4 5 6 7
Not at all important — Somewhat — Very important

4. How capable do you feel of continuing to avoid these? 1 2 3 4 5 6 7
Not at all capable — Somewhat — Very capable

5. How likely are you to prevent these patterns? 1 2 3 4 5 6 7
Not at all likely — Somewhat — Very likely

6. How successfully have you avoided these patterns? 1 2 3 4 5 6 7
Not Successful — Some — Entirely Successful

A. Positive Emotional Goals

On the pre test you described your emotional goals as follows.

Please rate the following items one more time.

2. To what extent do you think and act this way now? -	1 2 3 4 5 6 7 Never like this Sometimes Very often like this
3. How important is it to you to be this way now?	1 2 3 4 5 6 7 Not at all important Somewhat Very important
4. How capable are you of continuing to improve?	1 2 3 4 5 6 7 Not at all capable Somewhat Very capable
5. How likely are you to continue improving?	1 2 3 4 5 6 7 Not at all likely Somewhat Very likely
6. How successful have you been in improving your moods?	1 2 3 4 5 6 7 Not Successful Some Very Successful

3B. Undesirable Emotional Patterns

On the pre test you described your undesirable emotional patterns as follows.

Please rate the following items one more time.

2. To what extent do you have these undesirable patterns now? 1 2 3 4 5 6 7
-
Never like this — Sometimes — Very often like this

3. How important is it for you to continue avoiding this? 1 2 3 4 5 6 7
Not at all important — Somewhat — Very important

4. How capable do you feel of continuing to avoid these? 1 2 3 4 5 6 7
Not at all capable — Somewhat — Very capable

5. How likely are you to prevent these patterns? 1 2 3 4 5 6 7
Not at all likely — Somewhat — Very likely

6. How successfully have you avoided these patterns? 1 2 3 4 5 6 7
Not Successful — Some — Entirely Successful

Thank you very much for fully completing these goal questionnaires.

Appendix F
IRB Approval Form

FILE COPY

MAILED
03/14/03
CRC

University and Medical Center Institutional Review Board
East Carolina University
Ed Warren Life Sciences Building • 600 Moye Boulevard • LSB 104 • Greenville, NC 27858-4354
252-744-2914 / 252-744-2395 / 252-744-1971 office • **252-744-2284 fax**
www.ecu.edu
Chair: Charles W. Daeschner, III, MD

TO: Beverly Harju, PhD, Department of Psychology, BSOM, ECU, Rawl 104

FROM: Charles W. Daeschner, III, M.D., Chair, UMCIRB CWD/cre

DATE: March 7, 2003

RE: Expedited Approval for Continuous Review of a Research Study

TITLE: "Measuring the Effectiveness of a University Wellness Program on Employee Stress and Quality of Life."

UMCIRB #03-0048

The above referenced research study was initially reviewed and approved (by the convened University and Medical Center Institutional Review Board (UMCIRB) on **3/3/03**. This research study has undergone a subsequent continuous review approval using expedited review on **3/3/03** by Dr. C. Daeschner. This research study is eligible for expedited review because research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies. (NOTE: Some research in this category may be exempt from the HHS regulations for the protection of human subjects. 45 CFR 46.101(b)(2) and (b)(3). This listing refers only to research that is not exempt.). Dr. C. Daeschner deemed this **non-externally** sponsored study **no more than minimal risk** requiring a continuous review in **12 months**.

The above referenced research study has been given expedited approval for the period of **3/3/03** to **3/2/04**. The following are the most currently approved items as they have been previously submitted:

- Protocol (no version date)
- Informed consent document (no version date)
- Wellness Institute Pre Test (no version date)
- Wellness Institute Post Test (no version date)
- Letter to IRB (dated 2/14/03)

Dr. C. Daeschner does not have a potential for conflict of interest on this study.

The UMCIRB complies with 45 CFR 46, 21 CFR 50, 21 CFR 56, ICH Guidelines, UMCIRB standard operating procedures, institutional policies and other applicable federal regulations.

The UMCIRB recognizes the investigator and research team's commitment to comply with 45 CFR 46, the UMCIRB standard operating procedures and institutional policies in the conduct of all research. Investigator also must comply with 21 CFR 50, 21 CFR 56, ICH Guidelines, and all other applicable federal regulations in their research endeavors.

pn