THESIS

PREDICTION OF EXERCISE ADHERENCE WITH GOAL ORIENTATIONS AND MOTIVATIONAL CLIMATE

Submitted by

Antonio Adrian Ricciardi

Department of Health and Exercise Science

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Master's Committee:

Advisor: Brian Butki

Tiffany Lipsey
Kathryn Rickard

ABSTRACT

PREDICTION OF EXERCISE ADHERENCE WITH GOAL ORIENTATIONS AND MOTIVATIONAL CLIMATE

Decreasing physical activity levels across the nation have aided in the rise of obesity. One reason for this decline in activity is the lack of adherence to exercise programs. Psychological factors such as goal orientations and motivational climates may provide insight into the adherence of exercise. The collegiate population (18-25 years old) at the campus of Colorado State University was sampled in the present study. Individual goal orientations of the subjects were measured using the Task and Ego Orientation in Sport Questionnaire (TEOSQ). Participants were categorized by their individual goal orientations, high task/high ego, high task/low ego, or low task/high ego. Subjects were randomly placed into two groups where they underwent a six-week exercise program with varying motivational climates. The number of attended sessions was greater in the Task/Mastery (T/M) climate compared to the Ego/Performance (E/P) climate (8.84 ± 2.48 to 6.16 ± 2.52, respectively), while the number of missed sessions following exposure to the environment was lesser in the T/M climate, comparatively (3.00 ± 2.43 to 5.53 ± 2.44). Further, task orientation scores were positively correlated with attendance and negatively correlated with missed sessions. Ego orientation scores were in direct contrast revealing negative correlation with attendance and positive correlation with missed sessions. Additionally, individuals with high task/low ego orientation had better adherence outcomes and were the most motivationally adapted group. Lastly, ego scores increased in the E/P climate (3.29 ± 0.92 to 3.7 ± 1.1), while they decreased in the T/M

climate (3.33 $\pm$ 0.76 to 2.97 $\pm$ 0.82). These data provide a greater understanding of the relationship between not only motivational climates and exercise adherence, but also between goal orientations and motivational climates. Task-oriented individuals inherently adhere to exercise programs more easily regardless of the motivational climate compared to ego-oriented individuals. Also, it has become clear that a T/M climate improves exercise adherence outcomes regardless of individual goal orientation based on the finding that dispositional orientations might be altered by the climate provided.

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CHAPTER I

INTRODUCTION

Despite efforts such as Healthy People 2010, obesity trends across the nation continue to rise. In the last decade, the number of states in the U.S. with an obesity prevalence of greater than or equal to 30% increased from zero to twelve. Furthermore, approximately 2.4 million additional adults were classified as obese over the span of two years, 2007 to 2009. Overall, it was found that 35.7% of the adult population in the United States is classified as obese (Centers for Disease Control and Prevention (CDC), 2012).

Inadequate physical activity is one of the main contributors to this epidemic. In 2007, only 48.8% of the population reported as having the recommended levels of physical activity. The other 51.2% reported as either insufficient or inactive. These were defined as receiving greater than ten minutes per week while still below recommended levels and less than ten minutes per week of physical activity, respectively (CDC, 2007).

Despite increasing knowledge of the benefits of exercise, obesity and inactivity still affect a large portion of the population. Increasing physical activity must be at the forefront of this issue and the task may be accomplished through the understanding of exercise adherence and its relationship with motivational factors. Corresponding to this, the Transtheoretical Model (Prochaska, 1979) describes the steps of adopting a physical activity program. The model involves stages of pre-contemplation, contemplation, preparation, action, maintenance, and

termination. Initiating an exercise program results from moving through the first four stages. The transition from action to maintenance, which represents adherence to the program, is often difficult and leads to high rates of dropout. Therefore, the present study focuses on motivational factors that may play a role in improving exercise adherence and reducing the difficulty of transitioning to a maintenance stage. The connection between individual goal orientations and motivational climates was explored to determine their relationship with exercise adherence.

Statement of the Problem

The purpose of the study is to further define the association between goal orientations and motivational climates while also clarifying their relationship with exercise adherence.

Hypotheses

It was hypothesized that high ego-orientation alone would correlate negatively with exercise adherence while high task-orientation would correlate positively with adherence. The latter should especially be true with high task/high ego participants.

Additionally, when matched with high-task oriented subjects, a mastery climate would provide higher rates of adherence and a performance climate would have lower rates of adherence. Further, when matched with high ego-oriented subjects, a mastery climate would maintain higher rates of adherence and a performance climate would have higher rates of adherence with top performers, but lower rates with sub-par performers.

Limitations and Assumptions

Limitations to the study included lack of control of free living factors such as sleep, stress levels, and social support, which may have played a role in mood, motivational drive, and acceptance of the exercise program. Another limitation included the rationale for not attending exercise sessions. Motivational reasoning was not the only factor involved as it was indicated by

the subjects that work/school, health issue/injury, family emergency, and other elements outside of their control aided in the missed sessions. Additionally, the honesty and correctness of the completion of the motivational questionnaires (TEOSQ and PMCSQ) are assumed. The individual goal orientations as well as the perceived motivational environment result from the participants' responses to these questionnaires and therefore, misunderstood questions may play a role in the categorization of goal orientations and the perceived environments. Further, a small sample size and the inability to recruit subjects with a wider range of dispositional goal orientations contributed to the use of a mid-level split technique.

CHAPTER II

LITERATURE REVIEW

The rates of obesity among the U.S. population continue to rise over time and are at the highest in recorded history at 35.7% (CDC, 2012). Further, according to the CDC (2007), physical inactivity aided in this rise of the obesity epidemic with only half of the nation's population receiving recommended amounts of exercise. The issue of inactivity may lie not in initiating exercise programs, but in adhering to the programs once they are started. As stated previously, many factors play a role in initiating and maintaining an exercise program, but the present study focuses on two specific psychological aspects that have been linked to adherence, goal orientation and motivational climate. Goal orientations or an individual's dispositional/situational goal preferences and motivational climates or the motivational environment provided in an achievement setting are being explored in more depth to help solve the issue of exercise adherence and ultimately, the obesity epidemic.

Influential Factors of Exercise Adherence

Goal Orientation

According to Lewthwaite (1990), exercise adherence is partly directed by goals and the belief that these goals can be achieved. This is better known as goal orientation. "Goal

orientations are context-specific concerns or aims of personal involvement that, in part, create the framework or meaning through which people act and react to events in their environment" (Lewthwaite, 1990, p. 810). There are two main types of goal orientation including task-orientation and ego-orientation. These two categories are commonly used to define success in individuals. Task-orientation classifies success as mastery or task improvement, which focuses on personal achievement. Ego-orientation differs in that success stems from winning and outperforming others, taking an external approach (Wang, Chatzisarantis, Spray, & Biddle, 2002). Competence in an activity is also affected by goal orientations. Task-oriented subjects' competence levels "are self-referenced and effort dependent" while ego-oriented subjects' levels are dependent on performance compared to others (Tzetzis, Gouda, Kourtessis, & Zisi, 2002, p. 178). It is also important to note that individuals may be both task and ego-oriented in differing degrees. People fall into one of four goal orientations: low task/low ego, low task/high ego, high task/low ego, or high task/ high ego. Each of the orientations may have competing effects on exercise adherence and motivation towards physical activity.

Related to this, Xiang, McBride, Bruene, and Liu (2007) completed research involving the four orientations and their relation to expectancy beliefs and participation in a running program. The investigators showed that the high task groups, regardless of ego-orientation, had better motivational outcomes. The outcomes were described as increased levels of expectancy belief and a greater intention for future participation. Additionally, the low task/high ego group scored lower in expectancy beliefs and had decreased intentions for future participation. These findings support a review of motivational factors, which revealed that task-oriented participants had the highest reported levels of participation in physical activity while ego-oriented goals did

not relate to participation. Furthermore, it was established that exercise adherence could be predicted by task-orientation (Lewthwaite, 1990).

Additionally, Wang et al. (2002) measured goal orientations, perceived competence, and physical activity participation in 824 students aged 11 to 14 years. They found that students who were highly motivated tended to have the highest activity levels. Moreover, their motivation was self-determined and they held the belief that their abilities were incremental. Conversely, the low motivated group had the least amount of physical activity while having a lesser belief of incremental ability. Overall, a high task-orientation was positively related to self-determined motivation as well as the idea that ability is changeable with learning (Wang et al., 2002).

Similar to these findings, Standage and Treasure (2002) found task-orientation to be positively associated with self-determined motivation (intrinsic motivation). Task orientation was also negatively related to external regulation and amotivation. Amotivation is an inability or unwillingness for participation. This means that participants with low task-orientation had higher levels of amotivation towards physical activity and higher instances of withdrawn effort due to the belief of lesser ability. Again, high task-orientation was found to be the main concept for increased motivation while the low task/high ego group was determined to be "the most motivationally at risk group" (Standage et al., 2002, p. 99).

Shifting the focus from task-orientation, Tzetzis et al. (2002) showed that high task-oriented students had greater participation in vigorous activities with both high and low ego-orientations. Past research established that task-orientation was positively related to exerted effort, persistence, and physical activity. However, ego-orientation was linked to both high effort and low effort depending on the level of perceived competence. If competence levels are "high then the effort is also high. On the contrary, if the level of perceived competence is low,

the effort is also low because individuals believe that they cannot outperform others" (Tzetis et al., 2002, p. 184). In the past, ego-orientation has been seen as a negative influence of motivation and effort, but this finding suggests that high ego, when combined with high task, may lead to increased motivational factors (Tzetis et al., 2002).

Carr (2006) provided additional support for a high ego/high task grouping. In his study, motivational factors were consistent in groups with both high and low ego-orientations when paired with high task-orientation. It is believed that success of the high ego/high task groups arose from the high task-orientation minimizing the negative effects of high ego-orientation. In other words, when competence levels were low, individuals could rely on their high task-orientation to maintain motivation (Carr, 2006). Due to the more recent discoveries in ego-orientations, the high ego/high task group is often seen as the most motivationally adaptive group, even more so than the low ego/high task group.

Self-Handicapping

Despite the encouraging findings involving high ego-orientation, a maladaptive behavior known as self-handicapping has been linked to the motivational goal preference. According to Berglas and Jones (1978), self-handicapping is conceptualized as "any action or choice of performance setting that enhances the opportunity to externalize (or excuse) failure and to internalize (reasonably accept credit for) success" (p. 406). Standage et al. (2007) further explained that there are two types of self-handicapping: behavioral and claimed. Behavioral self-handicapping refers to obstacles created by the subject designed to restrict performance or participation. Claimed self-handicapping consists of excuses presented before participation that

may or may not be factual. Regardless of behavioral or claimed, self-handicapping can be predicted by ego-orientation.

Yoo (1999) stated that ego-orientation, when combined with a low perception of ability, caused individuals to decrease effort and participation as well as avoid challenging tasks. Ego-orientation and low perceived ability might be related to anxiety in a competitive setting (Ntoumanis & Biddle, 1998). High anxiety toward physical activity could possibly lead to high drop out rates and low adherence to exercise. Furthermore, high ego-orientation, when not paired with high task-orientation, was characterized by decreased enjoyment and satisfaction of physical activity (Smith, Balaguer, & Duda, 2006). Lewthwaite (1990) discovered a combination of the above factors. This work determined that self-handicapping children "withdraw effort and decrease persistence; express anxiety, frustration, or task aversion; and verbalize attributions for failure to uncontrollable factors such as personal inadequacy" (Lewthwaite, 1990, p. 810). Additionally, these children opted for either easy tasks or very difficult tasks showing their fear of inadequacy (Lewthwaite, 1990). These findings of maladaptive motivational results led researchers to explore self-handicapping behaviors in more depth.

Thompson and Richardson (2001) exposed high and low self-handicappers to one of three feedback conditions: (1) failure, high task importance; (2) failure, low task importance; and (3) success. They established that high self-handicappers had greater instances of pre-emptive self-handicaps and "claimed performance impairment[s] due to anxiety" when compared to low self-handicappers (Thompson et al., 2001, p. 165). In relation to the assigned conditions, high self-handicappers performed fewer tasks in the failure, high task importance condition than in the success condition. Additionally, low self-handicappers behavior was undifferentiated across all

of the conditions highlighting the effect of high self-handicapping. High self-handicappers also reported lower satisfaction with success, decreased happiness with performance, decreased control, and increased anxiety compared to low self-handicappers (Thompson et al., 2001). A failure to internalize performance outcomes leads to uncertain abilities resulting in reliance on self-handicapping as protective strategy. Consequently, there is less happiness and satisfaction with performance even in success (Murray & Warden, 1990).

Elliot and Church (2003) also studied self-handicapping and defensive pessimism (set low expectations and use worst-case scenarios to protect self-esteem) as it related to a form of goal orientations. It was determined that defensive pessimists adopted approach and avoidance ego-orientations while being negatively related to task-orientations. Approach goals referred to accepting tasks to attempt to achieve success while avoidance goals focused more on preventing failure. Based on this, defensive pessimism was a form of active avoidance. In regards to self-handicapping, it was "grounded in avoidance motivation". There was also an absence of approach motivation suggesting a willingness to give up success to avoid failure. The self-handicappers' willingness to give up success may be accounted for by this lack of motivation to achieve. In relation, self-handicappers were shown to use obstacles to increase chances of failure. This strategy was most likely performed so obstacles could take the place of ability as the reason for failing (Elliot et al., 2003).

In the work by Standage et al. (2007), task-orientation had a negative relationship with self-handicapping, but unlike Elliot et al. (2003), ego-orientation was shown to have no relationship with self-handicapping. However, subjects who were placed in an ego-involving climate were shown to report more self-handicapping claims than subjects placed in a task-involving climate. The ego climate forced individuals to shift their goal orientation more

towards ego, which increased the instances of self-handicapping claims. This increase was thought to stem from the self-protective strategy of concealing a lack of ability (Standage et al., 2007). The research by Standage et al. (2007) provides supportive evidence for the promotion of task orientation and also introduces another factor that may play a role in exercise adherence.

Motivational Climate

Motivational climates are considered to be social situations formed by others (coaches, trainers, teachers) that can influence motivational factors in a participant. There are two types of motivational climates expressed in the literature. A task/mastery motivational climate (T/M) is described as a condition "emphasizing effortful involvement over outcome, personal improvement, and collective contributions" (Balaguer, Duda, & Crespo, 1999, p. 381). An ego/performance climate (E/P) is "highly competitive… entail the public evaluation of skills, emphasize normatively based feedback which favors the highly able, and/or are punitive when mistakes are made" (Balaguer et al., 1999, p. 381). These two climates have been found to increase or decrease factors affecting exercise adherence.

In a sample of tennis players, a T/M climate was perceived to improve psychological factors of the game. Additionally, self-reported satisfaction of competitive results and level of play were negatively related to a perceived E/P climate while being positively related to a T/M climate. This shows the constructive effects of a T/M climate when compared to an E/P climate. The players also enjoyed the amount of teaching and personalized treatment associated with the T/M environment further stating that if a coach introduced a T/M condition, then he/she would be considered more of an "ideal" coach (Balaguer et al., 1999).

Providing a more in depth view, Ntoumanis & Biddle (1999) performed a review of the literature assessing short-term interventions, long-term interventions, and climate in sport and in physical education. The short-term intervention studies emphasized more of a T/M climate by showing that participants used subjective measures to evaluate ability, put forth more effort, accredited success to effort, and had higher levels of intrinsic motivation when exposed to a task climate.

The long-term interventions were a reflection of the positive effects found in the short-term. The subjects' cognition, affect, and behavior were positively related to the T/M condition while being negatively related to the E/P condition. They also showed greater enjoyment, perceived ability, and intrinsic motivation with the T/M climate (Ntoumanis et al., 1999). The findings involving the E/P condition support those found by Balaguer et al. (1999) as well as those found in the review of climate in sport.

E/P climate in sport was associated with maladaptive motivational behaviors including increased worry and a focus on ability. Again, the T/M condition contributed to increased perceived ability, self-efficacy, enjoyment, and effort (Ntoumanis et al., 1999). Yoo (1999) also discovered that evaluated skill and adherence increased with actual sport skill and adherence to assigned tasks in the sport setting. Additionally, there was a positive relationship found between the T/M climate and flow in adolescent athletes (Murcia, Gimeno, & Coll, 2008).

Physical education research reiterated the importance of a T/M condition showing improvements in intrinsic motivation, anxiety, and intentions to exercise while the E/P condition was either unrelated or negatively related to the same factors (Ntoumanis et al., 1999). There is a growing body of research to support the negative effects of an E/P climate as presented by

Standage et al. (2007). These findings have shifted thought towards promoting the T/M motivational climate in all motivational settings.

Standage, Duda, and Ntoumanis (2003) explained that a perceived T/M climate led to identified regulation. They proposed that "students have much to gain motivationally from an environment that promotes learning, effort and personal improvement" (Standage et al., 2003, p. 643). Additionally, Skjesol and Halvari (2003) stated that a T/M climate was vital to physical activity involvement as it increased enjoyment and pleasure in learning.

To further explore T/M environments, Barkoukis, Tsorbatzoudis, and Grouios (2008) implemented a task, authority, recognition, grouping, evaluation, and time (TARGET) structure, which involves participants in the programming of physical education. The structure fostered task learning, personal improvement, and a T/M climate. This led to increased enjoyment and competence with decreased anxiety and worry. These results revealed the value of the TARGET structure and its ability to create such an environment.

Contrary to the majority of the research, Ommundsen and Roberts (1999) offered that both T/M and E/P motivational climates could be utilized, in conjunction with one another, to improve motivational factors. A climate viewed as being strictly mastery oriented did not have significant differences when compared to a climate seen as mastery and performance oriented. Actually, athletes who observed the climate as high mastery and high performance used mastery as a source of satisfaction more than the athletes who perceived the climate as high mastery and low performance. High mastery and high performance also supported "lifetime skills and the development of social responsibility as purposes of taking part in a team sport more than the athletes perceiving the climate as low in mastery and high in performance criteria. These athletes were also more likely to make use of a self-referenced conception of ability"

(Ommundsen et al., 1999, p. 395). As predicted, the low mastery and high performance climate was the most maladaptive isolating high mastery as the main factor in positive adaptations. The researchers believed that "having the climate elicit multiple criteria of success may help the athletes to better cope with the competitive element of sport as it may give them a broader basis for experiencing success" (Ommundsen et al., 1999, p. 395).

Motivational Climate and Goal Orientation

Motivational climates and goal orientations have been shown to have a relationship with one another. Generally, it was found that a T/M climate was linked to task orientation while an E/P climate was linked to ego orientation (Ntoumanis et al., 1998). This was further supported by Yoo (1999) emphasizing the use of a T/M climate combined with task-oriented individuals. This environment produced increased enjoyment, effort, and competence. The E/P and ego-orientation condition reflected poorly on intrinsic motivation assumingly due to increased pressure (Yoo, 1999).

Contrary to these findings, Ommundsen et al. (1999) found that individuals coordinate task and ego goal orientations to achieve success, therefore, it may be beneficial to provide an environment with both mastery and performance cues to help facilitate this coordination. Having a high T/M and high E/P climate aided in the coordination of goals leading to adaptive behaviors. Despite knowing what combinations of goals and climates are motivationally adaptive, it is still unclear as to whether motivational climate alters the dispositional goals of individuals or whether individual goal orientations alter the perceived motivational climate. Ntoumanis et al. (1998) presented both sides of the argument as plausible. "Different goal orientations can influence the selection of cues that an individual will pick up from a sport

environment, but also long-term exposure in a certain motivational climate can affect the achievement goal orientation of an individual" (Ntoumanis et al., 1998, p. 183).

Conversely, the work of Standage et al. (2003) demonstrated the theory that goal orientation alters the perceived motivational climate. Intrinsic motivation in the subjects was increased by motivational climate only when task-orientation was high showing that the climate did not increase task-orientation in individuals with low task goals. However, high task-oriented participants who perceived a low T/M climate had a decline in intrinsic motivation. The researchers believed that the environment not matching the subjective goals forced subjects to withdraw. Therefore, it is maintained that motivation hinges on the matching of goals and climates, which is further supported by the increased motivation in low task subjects when exposed to a low T/M environment. Overall, a T/M climate did not yield increases in individuals with low task-orientations and although motivation declined in high task individuals when exposed to low mastery climates, they still maintained higher levels of motivation than the low task group (Standage et al., 2003).

Tzetzis et al. (2003) backed the findings of Standage et al. (2003) by showing that task-oriented individuals participated in activities that are more vigorous when compared to ego-oriented individuals. The subjects were placed in a T/M climate for this investigation. The climate presented decreased participation in those with ego goals rather than increasing task-orientation. This led to the conclusion that participation in an activity was based on the climate matching the goal orientation. If individual goals were not complemented with the corresponding climate, then participation in that program would not occur (Tzetzis et al., 2003).

Additionally, it was found that youth athlete male soccer players high in task-orientation were more likely to perceive the climate as task involving. Moreover, those players with low

task-orientation, not necessarily high ego, had "less adaptive perceptions of the motivational climate" (Smith et al., 2006, p. 1323). These studies all functioned with the understanding that motivational climates were perceived differently based on the dispositional goal orientations of the participants.

Counter to the above belief, the majority of the research endorses the theory that induced motivational climate dictates the adoption of goal orientations. One research study found a learning climate to be associated with task-orientation. Although similar to findings in support of the opposing theory, Skjesol et al. (2005) concluded that goals were shaped by the influence of motivational climates. Cury, Fonseca, & Rufo (2002) found indistinguishable results in that T/M climates related to mastery goals and E/P climates related to performance goals. From their findings, they had the same determination that goals were altered by motivational climates. In agreement, Standage et al. (2007) stated, "in compulsory activities such as school PE, situational goal perspectives [motivational climates] may take prominence over dispositional goal orientations" (p. 96).

To confirm this theory, investigators proposed to directly measure the outcomes of motivational climate on goal orientations. In a review conducted by Lewthwaite (1990), a study was performed, which measured goal orientations in children and then put them through either an E/P or a T/M motivational climate. The children placed in the E/P climate adopted performance goals and children placed in the T/M climate adopted mastery goals irrespective of original goal orientations. Hence, providing evidence that the environment presented to an individual can override predisposed orientations.

In another review of motivational climate, multiple studies emphasized the importance of climate over goal orientations. One study focused on perceived competence, levels of affect, and

changes in climate. They explained that levels of affect were unchanged in individuals with low and high competence in both the E/P and T/M climates. These data suggested that situational climate outweighed the dispositional goals. Secondly, another study took a more direct approach through actually measuring goal orientations with changing motivational climates. Ego-orientation was increased in those with low ego goals when assigned to an E/P climate. Additionally, ego-orientation decreased in high ego individuals when exposed to a T/M climate (Ntoumanis et al., 1999).

In a study performed by Wang, Liu, Chatzisarantis, and Lim (2010), 800 students were placed in varying motivational climates to explore their effects on goal orientations. In support of Ntoumanis et al. (1999) and Lewthwaite (1990), the T/M climate predicted task-orientations including approach and avoidance while the E/P climate predicted both ego-orientations. Barkoukis et al. (2008) added that if climates are strong, then a positive effect should be seen in the matching orientation with a negative effect in the opposing orientation. In addition, Digelidis, Papaioannou, Laparidis, and Christodoulidis (2003) claimed, "in order to have permanent effects on these dispositions, the learning motivational climate should be consistent across years, as its effects can be lost after a period with a typical class structure" (p. 208).

The most convincing results came from Carr (2006) utilizing two studies to deduce the outcome of motivational climates. Task goals were increased over two school terms in students who perceived a high T/M and low E/P climate. The group exposed to a low T/M and a high E/P climate saw reductions in mastery goals. Further, when the students were exposed to high T/M and low E/P in the first term and low T/M and high E/P in the second term, an increase in task goals from term one switched to a decrease in term two emphasizing the effect of motivational climate. As far as ego goals, ego avoidance goals were decreased when the subjects were placed

in a high T/M and low E/P climate while high to moderate levels of ego avoidance goals were maintained in a low T/M and high E/P climate. In addition, when the climate changed from the former to the latter, a decrease in avoidance goals in the first term was followed by an increase in the second term (Carr, 2006).

Overall, based on current research, it is clear that there is not only a relationship between goal orientations and motivational climates, but this research is also suggestive of a link between these two concepts and adherence to an exercise program. However, there is contradicting evidence as to how the two concepts interact with and affect each other. Dispositional goal orientations may affect the way a person perceives his/her environment, but on the other hand, the motivational climate may alter an individual's goal orientation. It is imperative to further the understanding of this relationship as it does have an impact on improving exercise adherence. Having a comprehensive understanding of the motivational aspects related to exercise adherence, physical activity levels and adherence to that physical activity may aid in the reduction in the incidence of obesity.

CHAPTER III

METHODS AND PROCEDURES

Overview

Using the Task and Ego Orientation in Sport Questionnaire (TEOSQ), subjects were instructed to describe when they felt most successful in activity based on task items (7 items) and ego items (6 items). As a result of their responses, individuals were classified as High Task/High Ego, High Task/Low Ego, or Low Task/High Ego. Low Task/Low Ego subjects were excluded from the study.

Following determination of goal orientations, subjects participated in a physical activity program based on either a Task/Mastery Motivational Climate (T/M) or an Ego/Performance Motivational Climate (E/P). The training program was designed to be a difficult task for a group of non- to mid level exercisers. This provides an environment that relies on motivational aspects to complete the training. Additionally, a track-style program allows a large pool of subjects to be trained and supervised simultaneously.

The assignment to the T/M and E/P groups was random. The T/M climate focused on individual improvement, effort, task completion, and learning while the E/P climate was highlighted by public evaluation of skills, negative feedback for mistakes, competition among participants, and favoring/rewarding of high performing subjects. In the present study, the T/M climate was administered through individual encouragement, form/breathing corrections,

instruction on pacing, focus on weekly individual improvement, equal attention to all participants, and equal praise for effort and completion. Conversely, the E/P climate was administered through the encouragement of beating others in workouts, public praise for being the best while identifying failures, giving most of the attention and rewards to the top subject, and constant public updates of the subjects' standing amongst the group. The subjects remained in their assigned climate for the entirety of the study period. Categories of goal orientations were evenly distributed through the two motivational climates due to random selection.

Additionally, exercise adherence was measured to determine individual maintenance and dedication to the physical activity program. Adherence, in the current study, involves subject presence at the twelve training sessions (2x per week). Attendance and the number of missed sessions following exposure to the motivational climate was measured. Data was collected following the end of the training period to account for adherence in each motivational setting (performance/mastery).

Lastly, the present investigation exposed subjects to one of two motivational climates to measure their relationship with exercise adherence. Therefore, it was important to determine if the motivational climates were properly administered to each of the groups. The Perceived Motivational Climate in Sport Questionnaire (PMCSQ) was used providing validity to the research.

Experimental Design

Subjects completed the Task and Ego Orientation in Sport Questionnaire (TEOSQ). A one-mile running time trial was completed after administration of the questionnaire for the purposes of adding a goal for improvement and public evaluation. Following the initial time trial, subjects underwent an exercise-training regimen for six weeks. The regimen included 60-

minute sessions of moderate to vigorous intensity cardiovascular endurance training two days of the week (track style training). Each session took place at the track on the cross streets of Peterson Street and East Pitkin Street- Fort Collins, Colorado. The E/P climate group met from either 2:30-3:30 or 4-5 pm Tuesdays and Thursdays while the T/M climate group met from either 12:00-1:00, 1:00-2:00, or 4:00-5:00 pm Wednesdays and Fridays. Program adherence was measured at the end of the six-week period based on the number of sessions attended. The final meeting included the TEOSQ as a reanalysis of goal orientation, the PMCSQ to evaluate the climate provided during the study, a survey listing the reasoning for adherence to the training program, and a final one-mile time trial.

Participants

Authorization was acquired from the Human Subjects Committee at Colorado State University before the recruitment of subjects. Subjects were also asked for their written informed consent to take part in the study.

Subject Selection

Sixty-two individuals were originally recruited for the study. Fifty-four began the training program, however, 10 subjects did not meet the minimum attendance required to be included in the study. Participants were 44 non- to mid-level exercisers (mean: 4.65 sessions per week over the last 6 months $\pm$ 1.77) volunteering from the campus of Colorado State University. Dropout rate was 30% in the T/M climate and 58.3% in the E/P climate. Groups were mixed gender (19 male, 25 female) between the ages of 18 and 25 (mean: 19.89 $\pm$ 1.56) to control for age- and gender-related motivations. Participant demographics are illustrated in Table 1. Following recruitment, the individuals received the TEOSQ and were placed into one of four

categories based on the outcome of the questionnaire: Low Task/ Low Ego, Low Task/High Ego, High Task/Low Ego, or High Task/High Ego. Low Task/Low Ego participants (n=12) were excluded from the group categorization analysis in the study. Subjects completed initial (health history, informed consent, TEOSQ) and final forms (TEOSQ, Perceived Motivational Climate in Sport Questionnaire, additional clarifying questions) and attend a minimum of 4 of the 12 training sessions, although they were asked to attend every session, to allow for the proper exposure to the motivational climates.

Table 1: Participant Demographics and Group Differences including Age, Gender, Height, Weight, BMI, and Exercise Sessions Per Week

	Age (years)	Gender	Height (m)	Weight (kg)	BMI (kg/m^2)	Exercise/Week (#/Week)
T/M Climate	19.68 ± 1.60	12-M; 13-F	1.72 ± 0.12	66.08 ± 13.89	22.24 ± 2.57	4.82 ± 1.77
E/P Climate	20.16 ± 1.50	7-M; 12-F	1.71 ± 0.11	65.06 ± 11.74	22.22 ± 2.05	4.42 ± 1.78
P-Value	0.32	N/A	0.75	0.79	0.98	0.47

P<0.05, Unpaired Student's t-test, Mean Scores ± SD

Measures

Task and Ego Orientation in Sport Questionnaire (TEOSQ) (Duda, 1989)

The TEOSQ is a 13-item questionnaire intended to analyze task and ego orientations in sport or physical activity. The form utilizes a 5-point Likert-type scale anchored with 1: strongly disagree and 5: strongly agree. The questionnaire has been used in many physical activity, exercise, and sport settings to determine the goal orientation of individuals. According to Fuzhong, Harmer, Duncan, Duncan, Acock, & Yamamoto (1998), the TEOSQ demonstrates factorial validity, construct validity, and item reliability.

Exercise Adherence

Attendance sheets were analyzed for the measurement of exercise adherence.

Perceived Motivational Climate in Sport Questionnaire (PMCSQ) (Seifriz, Duda, & Chi, 1992)

The PMCSQ is a 21-item questionnaire designed to assess the participants' perception of the motivational climate provided in the study period. The form also utilizes a 5-point Likert-type scale. For the purpose of the present study, the PMCSQ has been modified to fit the cardiovascular training program. It includes items involving outperforming teammates and punishment for mistakes (E/P climate) as well as hard work, skill improvement, and learning (T/M climate).

Statistical Analysis

A Student's t-test was utilized for the analysis of the PMCSQ, task and ego orientation scores (pre- to post-test), all pre-test comparisons between groups, attendance/missed session outcomes, and group score outcomes. Correlations were used to study the relationships between individual goal orientations and adherence outcomes in each of the motivational climates. The alpha was set at $p<0.05$. All statistical analysis was completed in Microsoft Excel

CHAPTER IV

RESULTS AND DISCUSSION

Results

Initial Characteristics

Table 1 illustrates participant demographics and initial differences between the T/M and E/P groups. There were no differences found between the two groups in age, height, weight, BMI, or number of exercise sessions per week. Similarly, there were no differences in initial task and ego scores between the two groups (Table 2).

Table 2: Differences in Pre- and Post-Test Task/Ego Scores Between Groups

Pre-Test Data			
	T/M Group	E/P Group	P-Value
Task Scores	4.48 ± 0.44	4.38 ± 0.41	0.44
Ego Scores	3.33 ± 0.76	3.29 ± 0.92	0.88
Post-Test Data			
Task Scores	4.59 ± 0.44	4.34 ± 0.48	0.08
Ego Scores	2.97 ± 0.82	3.7 ± 1.1	0.02

P<0.05, Unpaired Student's t-test, Mean Scores ± SD

Goal Orientation Scores and PMCSQ

Table 3 demonstrates the significance of the environments provided during the study period. Task scores remained statistically unchanged from pre- to post-test in both the T/M and E/P groups. However, ego scores were significantly increased in the E/P condition while being significantly reduced in the T/M condition. Related to this, it was discovered that post-test group ego scores were significantly different between groups compared to pre-test scores in which no significant differences were found (Table 2). To further strengthen these findings, perceived mastery scores of the PMCSQ were

significantly greater than the performance scores in the T/M group while the perceived performance scores were significantly greater in the E/P group (Table 3).

Table 3: Pre-Test to Post-Test Comparisons of Goal Orientations and PMCSQ Results			
T/M Climate	Task Pre-Test	4.48 ± 0.44	P-Value = 0.14
	Task Post-Test	4.59 ± 0.44	
	Ego Pre-Test	3.33 ± 0.76	P-Value = 0.02
	Ego Post-Test	2.97 ± 0.82	
	PMCSQ-Mastery	4.03 ± 0.31	P-Value = 9.3×10^{-14}
	PMCSQ-Performance	1.78 ± 0.61	
E/P Climate	Task Pre-Test	4.38 ± 0.41	P-Value = 0.69
	Task Post-Test	4.34 ± 0.48	
	Ego Pre-Test	3.29 ± 0.92	P-Value = 0.003
	Ego Post-Test	3.7 ± 1.1	
	PMCSQ-Mastery	3.13 ± 0.61	P-Value = 0.001
	PMCSQ-Performance	3.94 ± 0.55	
P<0.05, Unpaired Student's t-test, Mean Scores + SD			

Goal Orientation, Motivational Climate, and Adherence

Adherence to the training program as measured by attendance and the number of missed sessions was improved in the T/M condition. Number of attended sessions was greater in the T/M climate compared to the E/P climate (8.84 ± 2.48 to 6.16 ± 2.52, respectively) while the number of missed sessions following exposure to the environment was lesser in the T/M climate, comparatively (3.00 ± 2.43 to 5.53 ± 2.44) (Table 4).

Table 4: Adherence to Exercise Between T/M and E/P Groups			
	T/M Climate	E/P Climate	P-Value
Attendance	8.84 ± 2.48	6.16 ± 2.52	0.001
# of Missed Sessions Following Exposure	3.00 ± 2.43	5.53 ± 2.44	0.002
P<0.05, Unpaired Student's t-test, Mean Scores ± SD			

In addition to the climate affecting adherence outcomes, it was determined that the dispositional goal orientations also played a role. Task and ego orientation scores were correlated with attendance. Specifically, it was found that there was no significant relationship between attendance and task scores while in the T/M condition (Figure 1A). However, in the E/P condition, task scores had a moderate to strong positive correlation with attendance ($r = 0.40$, $r^2 = 0.16$) (Figure 1B). In all conditions (Figure 1C), there was a weak to moderate correlation of task scores to attendance ($r = 0.22$, $r^2 = 0.05$).

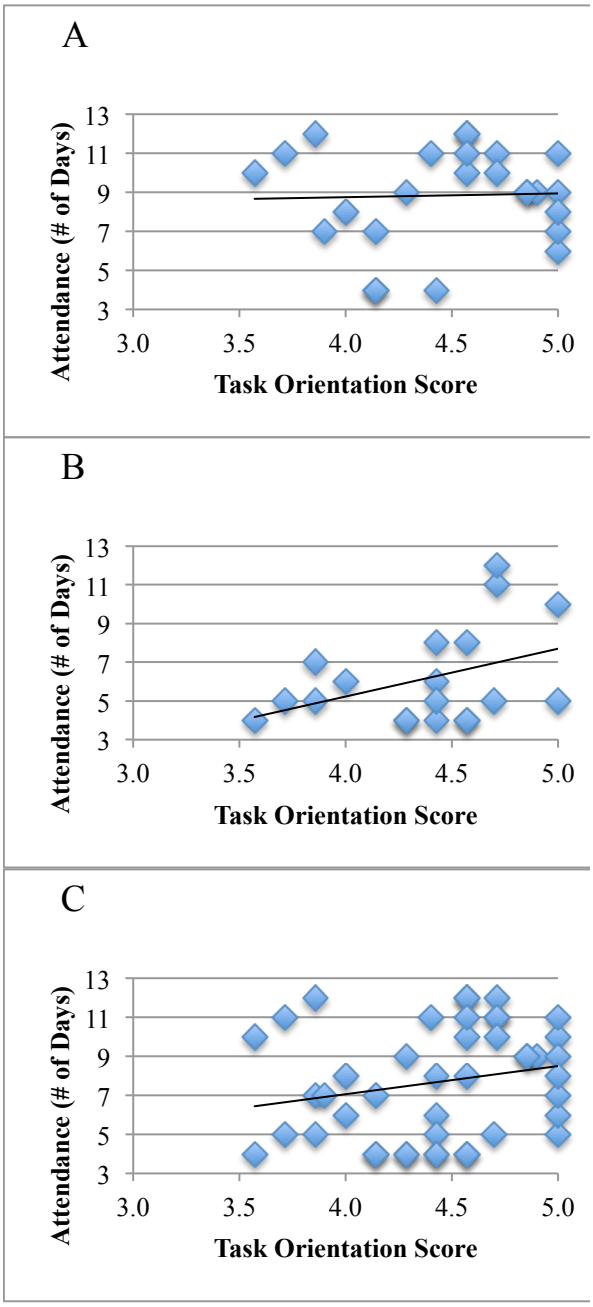

Figure 1: Correlation of attendance in number per days to task orientation scores in the T/M (A), E/P (B), and All (C) motivational climates.

Additionally, in the T/M climate, there was a weak negative correlation of ego scores to attendance ($r = 0.16$, $r^2 = 0.02$) (Figure 2A). The E/P climate demonstrated a moderate negative correlation ($r = -0.27$, $r^2 = 0.08$) while all climates had a weak to moderate negative correlation ($r = -0.18$, $r^2 = 0.03$) (Figure 2B and 2C, respectively).

Further, the relationship between goal orientation scores and the number of days

missed following exposure to the motivational climates also gives an indication of adherence to exercise. It was found that there was a weak negative relationship between days missed and task orientation scores in the T/M condition ($r = -0.11$, $r^2 = 0.01$) while there was a moderate to strong negative relationship in the E/P condition ($r = -0.43$, $r^2 = 0.19$). Combined climates showed a moderate negative relationship ($r = -0.27$, $r^2 = 0.07$). Conversely, the relationships of missed days and ego scores were in the positive direction. The T/M condition and all climates produced weak positive relationships with $r = 0.14$, $r^2 = 0.02$ and $r = 0.15$, $r^2 = 0.02$, respectively. The E/P condition showed a moderate positive correlation ($r = 0.23$, $r^2 = 0.05$).

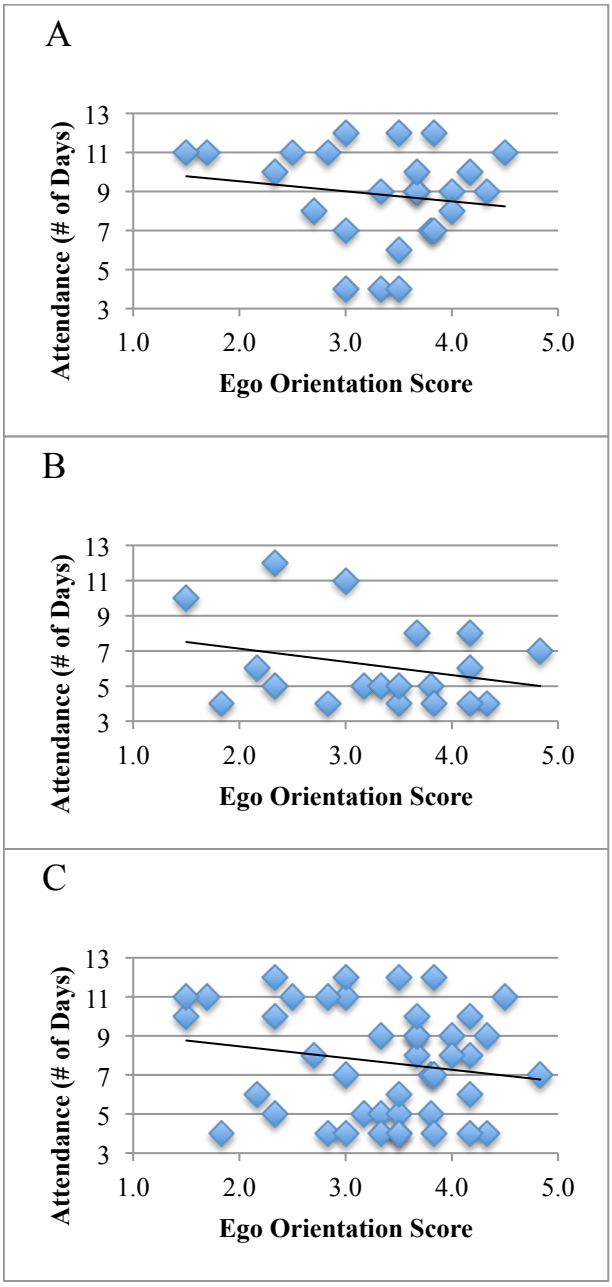

Figure 2: Correlation of attendance in number per days to ego orientation scores in the T/M (A), E/P (B), and All (C) motivational climates.

Dispositional Goal Orientation Group Score and Adherence

Group scores were determined using a mid-level split technique. Mean task and ego scores were calculated. Scores greater than the mean were placed in the high category while scores below were placed in the low category.

Group scores were coded as follows: high task/high ego (HH) = 1, high task/low ego (HL) = 2, and low task/high ego (LH) = 3 (Table 5).

Table 5: Determination of Group Scores w/Mid-Level Split

Goal Orientation Category	Goal Orientation Score Range
High Task	4.5 to 5.0
Low Task	1.0 to 4.4
High Ego	3.4 to 5.0
Low Ego	1.0 to 3.3

Adherence to the training program was affected by the goal orientation group categories. It was found that the HH and the HL group were not significantly different from one another in attendance or missed sessions (P-Value 0.06 and 0.14, respectively)(Table 6-7). Additionally, there were no significant differences between the HH and the LH group when considering attendance, but the HH group had significantly less missed sessions after exposure to the environment (P-Value 0.05). Further, the HL group was found to have significantly greater attendance and fewer missed sessions when compared to the LH group (P-Value 0.01) (Table 6-7). Overall, the HL group reported the greatest adherence outcomes.

Table 6: Group Scores and Adherence Values

Group Score		Average
High Task/High Ego Group	Attendance	8 ± 2.57
	Missed Sessions	3.36 ± 2.17
High Task/Low Ego Group	Attendance	10.13 ± 2.17
	Missed Sessions	1.88 ± 2.17
Low Task/High Ego Group	Attendance	6.6 ± 2.50
	Missed Sessions	5.4 ± 2.50

Mean Scores ± SD

Table 7: Comparison of Group Score Adherence Outcomes

Comparison		P-Value
High Task/High Ego to High Task/Low Ego	Attendance	0.06
	Missed Sessions	0.14
High Task/High Ego to Low Task/High Ego	Attendance	0.20
	Missed Sessions	0.05
High Task/Low Ego to Low Task/High Ego	Attendance	0.01
	Missed Sessions	0.01

$P<0.05$, Unpaired Student's t-test

Discussion

Major findings in the present study included task scores being positively related while ego scores were negatively related to the adherence outcomes of attendance and number of

missed sessions, high task group scores corresponded to greater attendance and fewer missed sessions when compared to low task group scores, attendance and number of missed sessions were improved in the T/M climate, and differing motivational climates altered post-test ego orientation scores.

Dispositional Goal Orientations and Adherence

Based on previous research, task orientation is normally associated with greater motivational outcomes. In support of this, a study determined that task oriented subjects had the highest reported participation in physical activity and that adherence to exercise could be predicted by task orientation (Lewthwaite, 1990). Similarly, in the present study, a running program was used to explore the relationship between goal orientations and exercise adherence. Task orientation scores were positively related to attendance and negatively related to number of missed sessions regardless of motivational climate. It is believed that these results stem from task orientation being connected to self-determined motivation, a greater belief of incremental ability, and the fact that success is effort driven (Standage et al., 2002; Wang et al., 2002). This may account for the fact that adherence outcomes were still improved with higher task scores even in the E/P condition. Rather than be influenced by their environment, participants relied on their task disposition. In support, Standage et al. (2003) stated that high task individuals exposed to low mastery climates still maintained higher levels of motivation than the low task group.

In contrast to task orientation, ego orientation has been connected to amotivation and self-handicapping. Unlike Lewthwaite (1990) who found no relationship between participation and ego orientation, the present study found more conclusive evidence. It was determined that ego orientation was correlated with poor adherence outcomes as the number of missed sessions was increased and attendance decreased. It has been suggested that higher ego orientation scores

result in withdrawn effort due to the belief of lesser abilities while concluding that the same ability is non-incremental (Standage et al., 2002; Wang et al., 2002). This may be the reasoning for the poor adherence outcomes related to the higher ego scores. Participants with low attendance may have compared their abilities to others in the program and concluded that they could not reach the same standard. Therefore, effort was withdrawn or a self-handicap was put into place to account for their performance in or absence from the program. Murray et al. (1990) concluded that when performance outcomes were not internalized, it led to uncertain abilities and self-handicapping as a protective strategy. Self-handicapping is based in avoidance motivation and a lack of approach motivation, which suggests that there is a readiness to give up success to avoid failure (Elliot et al., 2003). In agreement, Yoo (1999) found that ego orientation paired with low perceived ability led to decreased effort and participation and avoidance of challenging tasks. Additionally, this may be related to anxiety in a physical activity setting contributing to a high drop out rate (Ntoumanis et al., 1998). Drop out rates are typically reported as 50% in most adherence based programs. In the current study, drop out rates in the T/M group were reported as 30% while the E/P group reported a drop out rate of 58.3%. This could be related to an increase in ego scores that was seen in subjects placed in the E/P climate.

Despite ego orientation being related to amotivation, there is research relating it to improved effort as well as withdrawn effort. Tzetis et al. (2002) determined that ego orientation when paired with high perceived competence lead to improved effort and motivation with the direct opposite occurring with low perceived competence. The researchers believed that high ego when paired with high task would lead to greater motivational factors (Tzetis et al., 2002). This claim was supported by Carr (2006) who stated that the success of the HH group might be due to the high task orientation decreasing the negative effects associated with high ego

orientation. Meaning that when competence levels are low, an individual may rely or fall back on his/her high task orientation to maintain motivation (Carr, 2006). Notwithstanding previous research, the current study found no significant difference in attendance between the HH group and the LH group. However, the HH group did show significantly less number of missed sessions following exposure to the environment. Overall, the most motivationally adaptive group was found to be the HL group with the highest attendance and the lowest number of missed sessions. These findings disagree with Carr (2006) and Tzetis (2002), nevertheless, high task orientation remains to be the main driver of increased motivation, which is the consensus across much of the research. Taking a further look, it may be possible that perceived competence played a role in the outcome of the study. Although the subjects had task orientation to rely on, their low perceived competence may have had enough of an effect to reduce their adherence outcomes slightly and decrease significance.

Motivational Climates and Adherence

Although dispositional goal orientations do play a role in exercise adherence, more recently, there has been greater focus on motivational climates and the effects that they may have on the exercise community. As mentioned in the results of the present research, the number of attended sessions was greater in the T/M climate compared to the E/P climate (8.84 ± 2.48 to 6.16 ± 2.52, respectively) while the number of missed sessions following exposure to the environment was lesser in the T/M climate, comparatively (3.00 ± 2.43 to 5.53 ± 2.44). This may be due to the fact that exposure to a T/M condition has led to increased perceived ability, self-efficacy, enjoyment, and effort (Ntoumanis et al., 1999). Another source of enjoyment in the T/M climate may be the pleasure in learning/being taught and the personalized treatment

received by each individual (Balaguer et al., 1999; Skjesol, 2003). Ntoumanis et al. (1999) further discovered that these factors improved anxiety and intentions to exercise.

Decreasing anxiety in a physical activity setting could be one of the most important elements in remedying a high drop out rate and reducing instances of self-handicapping. In the present study, all individuals placed in the T/M climate with the exception of one (4.2%) responded "Yes" to the question of "Would you continue to attend these training sessions provided the environment/coaching remained the same?". The individual who answered "No" claimed to not enjoy running. Conversely, 36.8% of individuals in the E/P group responded "No", claiming the environment provided was not motivating and decreased their willingness to put forth the effort to attend and perform. In further support of the findings, an E/P climate was found to be associated with maladaptive motivational behaviors such as increased worry, a focus on ability rather than improvement, increased anxiety, and decreased intentions to exercise (Ntoumanis et al., 1999). The positive effects of the T/M climate combined with the negative effects of the E/P climate most likely account for the significant difference in adherence outcomes seen in the running program.

Motivational Climate Alters Goal Orientation

One of the most interesting findings was the change of dispositional ego scores due to the differing motivational climates. There is research claiming that dispositional goal orientations alter how the motivational climate is perceived. Based on this, it is believed that individuals who are high in task orientation are more likely to see the environment as task-involving and that motivational outcomes are improved by matching the environment to an individual's goal orientation (Smith et al., 2006; Standage et al., 2003; Tzetis et al., 2003).

However, ego scores were increased in the E/P climate and decreased in the T/M climate with both showing significance within and between groups. Task score changes (increase in T/M and decrease in E/P) did not reach significance, which may be due to the fact that most individuals began with relatively high task orientation. Regardless, this suggests that the environment provided plays a major role in overall motivational outcomes and in turn, adherence outcomes. Furthermore, the findings of the present study were strengthened by the results of the PMCSQ. The questionnaire determined that the subjects perceived the motivational climates as they were intended (E/P as E/P and T/M as T/M) rather than based on their dispositional goal orientation.

In agreement, Ntoumanis et al. (1999) found that high ego orientation was decreased in a T/M environment and low ego orientation was increased in an E/P environment during a 6-week aerobic fitness program. Moreover, Carr (2006) magnified the importance of motivational climate in an achievement setting. Utilizing two school terms of approximately 3 months, motivational climates were altered in a physical education setting and the resulting goal orientations were measured. They discovered that task goals were improved in a T/M environment and decreased in an E/P environment whereas ego goals were decreased in a T/M climate and increased in an E/P climate. Interestingly, when the environments were switched in the second school term, an increase in orientation in term one changed to a decrease in term two or a term one decrease changed to a term two increase (Carr, 2006). These data emphasize the effect of motivational climate on goal orientations irrespective of an individual's original dispositional goal.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

The collegiate population (18-25 years old) at the campus of Colorado State University was sampled in the present study (n=44). Individual goal orientations of the subjects were measured using the TEOSQ. Participants were categorized by their individual goal orientations, high task/high ego, high task/low ego, or low task/high ego. Subjects were randomly placed into either a T/M or an E/P motivational climate where they underwent a six-week exercise program. A T/M climate fosters individual improvement and effort while an E/P climate fosters competition and want to win. Adherence outcomes of attendance and number of missed sessions following exposure to the environment were recorded over the six weeks. Following the exercise program, each subject completed the PMCSQ and TEOSQ in order to validate the motivational climate provided to each group and re-evaluate dispositional goal orientations of each individual, respectively. Additional questions were also completed to gain a further understanding of the environment's effect on the participants. Number of attended sessions was greater in the T/M climate compared to the E/P climate (8.84 ± 2.48 to 6.16 ± 2.52, respectively) while the number of missed sessions following exposure to the environment was lesser in the T/M climate, comparatively (3.00 ± 2.43 to 5.53 ± 2.44). Further, task orientation scores were positively correlated with attendance and negatively correlated with missed sessions. Ego

orientation scores were in direct contrast demonstrating negative correlation with attendance and positive correlation with missed sessions. Additionally, it was found that individuals with high task/low ego orientation had better adherence outcomes and were the most motivationally adapted group. Lastly, ego scores increased in the E/P climate (3.29 ± 0.92 to 3.7 ± 1.1) while they decreased in the T/M climate (3.33 ± 0.76 to 2.97 ± 0.82). The effects of goal orientations on adherence outcomes were most likely related to the inherent characteristics of the specific goal. Task orientation is commonly connected with self-determined motivation, a greater belief of incremental ability, and the fact that success is effort driven, which often result in improved adherence. In contrast, ego orientation is related to amotivation, anxiety, and self-handicapping. These factors correspond with decreased intentions to exercise and lower perceived competence. In regards to motivational climate, positive adherence with a T/M climate may be related to improving perceived ability, self-efficacy, enjoyment, and effort while also reducing anxiety. Subjects enjoy personalized attention and the opportunity to learn. On the other hand, it is possible to make a connection between an E/P motivational climate and negative exercise adherence outcomes. The E/P climate alters dispositional goals, most notably increasing ego goals, which leads to increased instances of self-handicapping, removed effort, and anxiety as perceived competence diminishes (Standage et al., 2007). Ultimately, the negative consequences lead to increases in drop out rate. In succession, a large percentage of the American population fails to meet recommended levels of physical activity, which may contribute to the continually rising obesity epidemic.

Conclusions

Task-oriented individuals inherently adhere to exercise programs more easily regardless of the motivational climate compared to ego-oriented individuals. This is in line with the first

hypotheses presented stating that task orientation would correlate positively while ego orientation would correlate negatively with adherence. However, the high task/high ego group was not found to be the most motivationally adapted group as predicted. Also, it has become clear that a T/M climate should be provided in order to improve exercise adherence outcomes regardless of individual goal orientation based on the finding that dispositional orientations might be altered by the climate provided. The finding partially proves the final hypotheses as a T/M climate promoted adherence with both high task and high ego scores; nevertheless, a performance outcome could not be completed, as attendance to the final time trial was inconsistent. The high dropout rate, most notably in the E/P climate, did not allow for performance to be measured properly through the current study by way of the one-mile time trail. This means that no conclusion could be drawn on adherence in the E/P climate related to individual performance levels and levels of perceived competence.

Recommendations

The most relevant issue with this study lies in the small sample size. Increasing the sample size may show the high task/high ego group as a motivationally adaptive group in addition to the high task/low ego group. Although adherence outcomes were improved in this group compared to the low task/high ego group, significance was not reached. Additionally, this increase in power may have provided significance in the result involving the alteration of task orientation with exposure to motivational climates. There were signs of increase in task scores in the T/M climate and signs of decrease in the E/P climate, but both failed to reach significant values. A long-term study may also show significance that was not present in the current six-week program. It would be interesting to study the effects that a long-term climate intervention may have not only on goal orientations, but also on exercise adherence. Lastly, participant

reasoning for missed exercise sessions extended beyond the motivational climate provided. Many participants failed to attend due to family emergencies, school, work, and/or injury. This finding may play a role in the overall results of the study. Despite the reasoning for decreased attendance, the design of the present study did not track instances of self-handicapping, which may be present in the reporting of reasons for missed sessions. Future research may want to incorporate the measurement of self-handicapping to further improve the understanding of why exercise adherence is not easily attainable.

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APPENDIX I

Week 1	Day 1	Day 2	**Week 2**	Day 1	Day 2
	Warm Up: 2 lap jog around track, 10-meter A skips, 10-meter B skips, kareoka, progressive high knees, 4 50-meter strides **Workout**: One-Mile Time Trial **Cool-Down**: 2 lap jog and stretch session	**Warm Up**: Combo of jump squats, 50-meter stride, donkey kicks, 50-meter stride, 100-meter shuffles, 100-meter kareoka, and 100-meter stride **Workout**: 4 laps of 100-meter fartleks (hard to easy- self paced) **Cool-Down**: 1 lap slow jog, stretch session, and core		**Warm Up**: A-walks, B-walks, High knees, Flip kicks, and 4 50-meter strides **Workout**: 20-minute run **Cool-Down**: Stretch Session and Core	**Warm Up**: 5-minute jog, 10 power squats, 10 lunges, and 4 50-meter strides **Workout**: 2 x 4 200-meter intervals (40-50 sec.) Recovery- 50-meter jog and 5-minutes between sets **Cool-Down**: 1 lap jog, 5 easy strides, and stretch session
Week 3	Day 1	Day 2	**Week 4**	Day 1	Day 2
	Warm Up: 2 lap jog around track, 10-meter A skips, 10-meter B skips, kareoka, progressive high knees, 5 50-meter strides **Workout**: 2 x 7 30-60's (30 sec hard, 60 sec easy) Recovery- 5-minutes between sets **Cool-Down**: 2 lap jog and stretch session	**Warm Up**: 10 squats, 10-meter bounds for height, 10-meter bounds for distance, 10 lunges, 4 100-meter progressive strides **Workout**: 25-minute run **Cool-Down**: Stretch session		**Warm Up**: 2 laps of 100-meter fartleks **Workout**: BPC Circuit 2 x 2 (10 Burpees, 50 yard stride, 50 yard skip, 10 push ups, 50 yard stride, 50 yard skip, 20 crunches, 50 yard stride, 50 yard skip) Recovery- 5-minutes between sets **Cool-Down**: 2 easy laps and stretch session	**Warm Up**: 5-minute run and 5 50-meter strides **Workout**: Relay Competition (100, 100, 200, 400 x 2) **Cool-Down**: 2 easy laps and stretch session
Week 5	Day 1	Day 2	**Week 6**	Day 1	Day 2
	Warm Up: 10-meter A skips, 10-meter B skips, kareoka, progressive high knees, flip kicks, and 5 50-meter strides **Workout**: 20-minute run **Cool-Down**: Stretch session	**Warm Up**: 5-minute jog, 10 power squats 10 lunges, 10 side lunges **Workout**: 15 100-meter build ups **Cool-Down**: Stretch session and core		**Warm Up**: 2 lap jog around track, 10-meter A skips, 10-meter B skips, and 4 50-meter strides **Workout**: 2 x 300-, 200-, 100-, 50-meters **Cool-Down**: 1 lap jog and stretch session	**Warm Up**: 2 lap jog and 5 50-meter build ups **Workout**: One-Mile Time Trial **Cool-Down**: 5-minute easy jog, core, and stretch session