Peer Motivational Climate and its Relationship with Positive and Negative
Affect in Intramural Sports

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Abstract

The study of peers as an influence on sport participation has received minimal exploration. The purpose of this cross-sectional study was to determine how peer created motivational climates (task-involved and ego-involved) impact positive and negative affective states of intramural sport participants post-participation. Three hundred and fifteen intramural sport participants (N=315) at a Canadian university completed a questionnaire after participating in their intramural sport. Hierarchical regression analyses and MANCOVAs were used to examine the effects of peer motivational climates on positive and negative affect. Results revealed that task-involved peer climates are more conducive of positive affective states post-participation whereas ego-involved climates result in lesser positive affective states and more negative affective states. Teams that promote improvement and effort instead of intra-team competition and conflict will have more positive recreational sport experiences. Future research should explore other psychological outcomes that can result from peer created motivational climates in recreational sport team settings.

Key words: Motivational Climate, Peers, Intramural, Sports, Affect

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Introduction

Background

Intramural sports in university campuses offer various team and individual sport experiences that can result in many positive psychological benefits for its participants. One of these benefits includes an increase in the positive affective outcomes (positive emotions) of students who participate in them. However, previous studies indicate that intramural sports in many institutions struggle for legitimate inclusion in the higher education environment (Lewis, Barcelona, & Jones, 2001) and also face dwindling budgets and poor attendance (Kanters & Forrester, 1997a). This can ultimately lead to the elimination of programs to save money, or being unable to purchase and maintain the equipment needed to carry out these activities. In order to advocate for the significance of these programs it would be helpful for more research to support the relationship between intramural sports and their subsequent benefits associated with participation. If intramural sports are found to deliver benefits to its constituents they will be perceived as more important by decision makers in charge of their funding (Kanters & Forrester; Lewis et al.). Therefore, research that explores the relationship between intramural sports and its benefits, such as positive emotions, can help towards establishing the importance of these programs in universities.

Sport has often been a hard to concept to explicitly define, however, a longstanding explanation proposed by Edwards (1973) defines sport as:

Activities having formally recorded histories and traditions, stressing physical exertion through competition within limits set in explicit and formal rules governing role and position relationships, and carried out by actors who represent

or who are part of formally organized associations having the goal of achieving

valued tangibles or intangibles through defeating opposing groups (p. 52).

However, this definition is very rooted in the view that sport is an institutionalized and

formally organized activity whereas some may see sport as a relatively informal and

spontaneous activity as well (Searle & Brayley, 1999). In this case, Kelly's (1990)

definition of sport may be appropriate as well which states "organized activity in which

physical effort is related to that of others in some relative measurement of outcomes with

accepted regularities and forms (p. 196). Intramural sports can be understood as those

programs which occur in a specific institution and are only open to individuals who

attend that institution. These particular types of sports programs differ from others such

as league and varsity. While most sports leagues are specific to a particular skill level,

The National Intramural-Recreational Sports Association (NIRSA, 2009) state that

intramural competition standards are quite flexible because "intramural participants range

in athletic experience from novice to expert" (p. 102). They further explain that "the

focus of the program is typically on participation and fun" (p. 102) while more

competitive leagues are often focused on winning and athletic development. It would also

be worth mentioning that some of the programs offered at the campus being studied are

coed and consist of both male and female participants competing against each other. Most

varsity and league sports are often gender specific.

Intramural programs are important because they provide individuals with a source

of positive affect in an environment that could otherwise be considered stressful or

conducive of negative affect (the opposite of positive affect). This is because students

enrolled in post-secondary institutions are constantly bombarded with expectations to

perform and achieve in the academic and social aspects of campus life. The negative implications of these pressures can be combated by the opportunities provided by intramural sports (Artinger et al., 2006) thus implying the critical importance of intramural sports in university campuses.

Sport programs can provide an excellent venue for the development of psychological benefits such as positive affective states. Several psychological benefits of participation in university based intramural sports programs have been identified by researchers in the past. For instance, Ellis, Compton, Tyson and Bohlig (2002) determined that participation in campus recreation services was found to influence satisfaction with students' university experiences and how often individuals felt like they had a lot of energy. Furthermore, in a survey conducted by Haines (2001) it was found that 75 percent of the surveyed university students indicated both a sense of accomplishment and a reduction of stress as positive psychological benefits that they experienced from university recreation. The Center for Assessment Research and Development and NIRSA (1991) also found that stress reduction and a sense of accomplishment result from participation in recreational sports in university in addition to feelings of physical wellbeing. Furthermore, in a technical report by NIRSA (2003) it is also agreed that reduced stress results from participation in university recreation as well as overall happiness, self-confidence, emotional wellbeing and character building. These findings help demonstrate that participation in intramural sports can influence and result in many positive psychological benefits.

There are several reasons why sports programs can provide an effective venue for these psychological benefits. One of the reasons is that sport, and other forms of physical

activity, offer opportunities to overcome challenges or accomplish goals with the skills one possesses. This can be followed by self-esteem benefits because of the feelings of satisfaction that accompany overcoming challenges and accomplishing one's goals (Nakamura & Csikszentmihalyi, 2002). In addition, sports are an effective method of stress relief benefits since they are a venue for fun and enjoyment making them an effective coping mechanism for decreasing high levels of stress (Nakamura & Csikszentmihalyi). Furthermore, Fraser-Thomas and Cote (2009) also found that recreational sports were conducive of a participant's ability to deal with their stress by teaching them techniques such as relaxing, controlling one's nerves, and refocusing. It has also been made clear that participating in sports helps maintain a positive and healthy state of mind. Fraser-Thomas, Cote, and Deakin (2005) indicate that, given how most individuals are often preoccupied with stressful and obligatory activities such as school or work, "those involved in sports experienced significantly more happiness or subjective well-being in their day-to-day living" (p. 24).

Another reason why sports produce positive psychological benefits points towards the supportive relationships that can occur in the sport setting. Fraser-Thomas & Cote (2009) found that sports provided an effective venue to develop strong peer relationships due to participants' common goals, similar work ethic, genuine support and care for each other, and shared enthusiasm for the sport. These strong peer relationships that are created are conducive to psychological benefits such as a sense of belonging. However, this is an obvious and direct psychological benefit of peers in recreational sports and it should be noted that a wide range of psychological benefits may be the result of one's peers in a sports environment, though these effects may not be as simple. Peers can have

an effect on other factors involved in recreational sports, such as the motivational climate experienced by participants, which can then be conducive of various positive (or negative) psychological benefits. Whether or not one's positive affective state is one of these psychological benefits of a motivational climate influenced by peers was explored in this research study.

Coaches' and parents' influence on young athletes' motivation to participate in sports has been well researched. However, the effect that peers have on one's motivation to participate has received little attention. This is problematic since peers on an individual's team can also strongly influence the motivation of young athletes' participation in sports. It has also been noted that athletes over the age of 10 judge their competence based on feedback from peers and start depending less on the feedback from adults (Vazou, Ntoumanis & Duda, 2005). Henceforth it is starting to become apparent that more research looking at the peer created motivational climate using an older sample of athletes is warranted. It would be important to note that most research exploring peer motivational climate tends to explore youth athletes as their sample of choice. This study expands this concept to an older group of participants, specifically, a sample of university students participating in on-campus intramural sports in order to determine the utility of this knowledge to individuals of a different age group. This study also intended to further the significance of intramural sports in the university setting by examining the influence of peer motivational climate on the affective outcomes of participating in intramural sports.

The first objective of this study was to conduct a factor analysis on the survey items used in order to determine whether or not these items affectively measured the

independent and dependent variables that were analyzed in this research, in addition to the covariates that were controlled for in these analyses. The second objective of this study was to find out if the two types of peer motivational climate, task-involved and ego-involved, in intramural sports predicted the affective states, positive and negative, that students experienced from participation. These variables underwent several hierarchical regression analyses which also helped control for covariates which included demographic information and individual's orientations towards sport participation (task-oriented and ego-oriented). The third objective of this study was to determine whether there were significant differences between high, medium and low levels of task- and ego-involved peer motivational climate on student's positive and negative affective states. This required the transformation of the peer motivational climate variables from continuous variables into discrete ones utilizing a cluster analysis. A multiple analysis of covariance (MANCOVA) determined whether there were significant differences between high, medium, and low levels of task- and ego-involved peer motivational climate on positive and negative affect.

Definitions

The term motivational climate refers to "perceptions of situational motivational cues and expectations that encourage a particular goal orientation, and at a given point in time, induce a certain goal involvement state" (Vazou et al., 2005, p. 498). With that said, a peer motivational climate looks at this concept as peers being the source of motivational cues and expectations. This type of environment can be understood in two ways. The first is a task-involving motivational climate in which athletes derive satisfaction from personal progress, perceive that significant others emphasize personal skill improvement,

and regard errors as part of learning (Vazou et al.). A task-involving climate is usually associated with positive motivational outcomes such as positive affect, interest, performance improvement, and performance satisfaction (Ntoumanis and Vazou, 2005). At the other end of the spectrum is an ego-involving motivational climate in which the emphasis is on interpersonal comparison, the demonstration of normative ability, and competition with teammates (Vazou et al.). Such ego-involving emphasis can result in feelings of anxiety, dysfunctional attributions, reduced effort, and other maladaptive outcomes (Ntoumanis and Vazou,). These task-involved and ego-involved peer motivational climates were the independent variables of this study. Additionally, the three task-involved dimensions of the PeerMCYSQ (Improvement, Relatedness/Support, and Effort) and the two ego-involved dimensions (Intra-team Competition and Intra-team Conflict) were also explored as predictor variables in this study.

The affective outcomes can be understood as the two dimensions of moods experienced by intramural participants. The first dimension, positive affect, can be understood as the extent to which a person feels enthusiastic, active and alert. Individuals high in positive affect can be characterized as having high energy, full concentration, pleasurable engagement, and enjoyment (positive feelings). On the other hand, an individual with low positive affect is characterized by sadness and lethargy (Watson, Clark & Tellegen, 1988). Negative affect, the second dimension, can be otherwise understood as subjective distress and unpleasurable engagement leading to a variety of aversive mood states. Individuals experiencing this could be seen as generally sad, angry, contemptful, disgusted, guilty, fearful, and nervous (negative feelings). On the other hand an individual with low negative affect can be characterized as being in a state of calmness

and serenity (Watson et al., 1988). The positive and negative affective states experienced by participants were the dependent variables of this study.

It may also be worth mentioning orientation towards sport participation as this is included in this study as a covariate in both the hierarchical regression analyses and the MANCOVA. Orientation towards sports participation can be understood as how an individual participant defines success in sports which can fall into the categories of a task-orientation or an ego- orientation (Castillo et al., 2009). A task-orientation towards sports participation can be understood as participating in sports for the purposes of gaining skill or knowledge and performing one's best (Castillo et al.). An ego-orientation on the other hand describes individuals who see the demonstration of superior competence and ability as fundamental to success (Castillo et al.). It was felt that an individual's own orientation towards sport participation could be an intervening factor in the relationship between peer motivational climate and affective outcomes so this was included in the analyses as a covariate to be controlled.

Significance of the Study

Research such as this has several implications that stem from statistically determining the connection that occurs between these variables. Firstly, this information can go towards establishing the significance and importance of an intramural sport program at a university. Practitioners would benefit from this research as it could further add to the rationale as to why intramural sports should receive greater allocation of financial resources due to their possible connection with benefits (Kanters & Forrester, 1997a; Lewis et al., 2001). Second, the recreation and leisure profession can benefit as well. Specifically, this study adds to the knowledge of benefits based recreation by

indicating the relationship between the motivational climate in a sports context and the positive affective outcomes experienced by those participating. In addition, this research determined if drawbacks (specifically negative affect) are associated with the social climate within intramural sports. Thirdly, this study adds to the knowledge surrounding the practical use of the social climate in sports teams and determines whether or not it is an important variable to take into consideration. Findings from this study could corroborate the important role of the peer group as a source of influence on motivation in sports (Joesaar et al, 2011). This has important implications for interventions aimed at increasing athletes' self-determined motivation for participation. It is important for intramural practitioners to promote a task-involving peer climate and avoid creating an ego-involving peer climate. Lastly, results from this study can further establish the reliability and validity of the scale that is being used to measure peer motivational climate, the PeerMCYSQ (Ntoumanis & Vazou, 2005), as it is fairly new and has not been utilized in many studies to date.

Limitations

The survey structure utilized in this study may pose as a limitation since it uses closed ended Likert-scale responses. This tends to force participant responses to conform to the standards put forth for this survey even though they may not fit into the categories as presented. It also reduces participants' ability to expand upon and give further insight into their responses as is a common limitation of quantitative research. Also, the use of participants from one post-secondary institution may reduce the generalizability of the results obtained. With respect to the measurement tool being used, the PeerMCYSQ, this has been designed towards, and typically used to measure, the perceptions of peer

motivational climate in youth sports with only adolescent samples. The ability to use this measurement tool with a university sample may warrant some scrutiny, therefore, the survey needed to be tested for internal consistency.

Assumptions

Several assumptions were made regarding this research. First, intramural sports are available to, and accessible for, students' participation. Few restraints exist that can keep individuals from participating in these programs, so they are understood as recreational endeavours willingly participated in by university students. Second, numerous students participate in the variety of intramural programs available. This means that the sample size needed to be as large as possible since the population size of intramural participants consists of a large proportion of students at the university in which they take place. A larger sample size would more accurately represent this population. It is also assumed that positive consequences of sport participation, such as positive affect (one of the dependent variables in this study), typically result from peer motivational climates that are task-involved. Specifically, it is believed that the more athletes perceive a greater task-involved climate the more likely they would experience higher positive affect and lower negative affect. On the other hand, it is also assumed that negative consequences, such as negative affect (the other dependent variable explored in this study), typically result from peer motivational climates which are ego-involved. Specifically, the more intramural participants perceive a greater ego-involving climate the more negative affect and less positive affect they experience. One last assumption is that, since there are no coaches on intramural sports teams and likely a lack of parental

intervention in a university student's decision to participate, the peer created motivational climate is the only social cue that warrants exploration in such a sample.

Conclusion

Considering the importance of peers as sources of motivation in intramural sports at university, as opposed to coaches, parents or other social cues not inherent in this environment, it is important to understand how one's affective state is influenced by one's peer created motivational climate. This research examined the relationships and significant differences between peer motivational climate and positive or negative affective states. The use of a series of regression analyses and a MANCOVA of survey data provided the means to accept or reject the hypotheses listed in the proceeding chapter.

Literature Review

The intent of this research study is to examine how university students' perceptions of peer created motivational climate predict affective outcomes experienced from participation in intramural sports. In addition, this research is one of few studies to date that uses the PeerMCYSQ and demonstrates the utility of this fairly new scale. To provide the appropriate background necessary for this study the following topics are discussed in depth. With regards to the independent variable of peer motivational climate, this chapter examines previous research which has looked at the effect of peer influence in sports, motivational climate, and how peers can influence motivational climate in sport participation. Furthermore, this chapter discusses the construction of the PeerMCYSQ which is being utilized in this study to assess peer motivational climate. The chapter also reviews four studies which have used this tool to measure peer motivational climate and indicate what relationships have been associated with both task-and ego-involved climates to date. In addition, with regards to the dependent variable of affective states, this chapter will examine the PANAS which has been well utilized by researchers to assess individuals' experiences of positive and negative affect. This chapter also examines research which has critiqued its utility with measuring this phenomenon and tested for its reliability and validity. Furthermore, it will review several studies that have utilized the PANAS as a measure of the quality of one's experience in sport participation and reveal what these researchers have discovered.

Peer Motivational Climate

The concept of peer created motivational climate is a fairly new research topic that has been conceptualized and explored more within the past few years. Due to its

relatively young and unoccupied body of knowledge, this concept warrants additional study to further our understanding of both its theoretical underpinnings and practical application. However, there is a fairly large amount of research that acts as a precursor to the idea of peer motivational climate. Studies that look at the motivational climate created by peers stemmed from research that examined how coaches and parents affected the motivation of young athletes in sports. Motivational climate is also built upon the theoretical framework guiding Achievement Goal Theory. This area of knowledge deals with the idea of motivation as a source of perceived competence in sport participation and is where the concepts of task-orientation and ego-orientation were derived (Vazou et al. 2005; Ntoumanis & Vazou, 2005; Duda, 1989). These are brought over to motivational climate to describe the two types of climates, task-involved and ego-involved (Vazou et al.; Ntoumanis & Vazou). Another area of knowledge guiding peer motivational climate is Self-Determination Theory (Vazou et al.) which proposes that intrinsic or self-determined motivation is influenced by three basic psychological needs. These needs are competence (one's ability to achieve desired outcomes), autonomy (an individual's desire to determine their own behaviour), and relatedness (an individual's perception of acceptance by others in a social context) (Vazou et al., 2005; Joesaar et al, 2011). Both these theories are exemplified in this construct of motivational climate. As stated, the motivational climate can be either task-involved or ego-involved. Additionally, these two peer climates could either promote or demote competence, autonomy, or relatedness. This would, in turn, heighten or minimize intrinsic (self-determined) motivation associated with sport participation (Vazou et al).

Peer Influence

Before theories that have lead to the development of peer motivational climate are explored it may be important to point out recent studies that have explored the influence of peers on one's participation in sports. Smith (2003), in particular, recognized the importance of peer interactions on sports teams. He explains that peers influence the quality of youths' overall experiences in this context. This has also been determined in other studies as many researchers exploring this topic have linked peer acceptance and friendships in sports to many benefits affecting one's overall experience. These benefits include high levels of commitment and enjoyment and lower levels of anxiety (Ntoumanis and Vazou, 2005). However one may argue that not all peer relationships exemplify acceptance and friendship but could instead demonstrate more negative aspects of peer relationships such as jealousy and inter-group competition or conflict. With this in mind one may ask how these types of negative peer relationships affect one's overall experience in a sport. However, only a handful of studies have examined how peer influence transmits and fosters achievement related criteria for success or failure (Ntoumanis and Vazou), some of which will be reviewed later on in this chapter.

Smith (2003) also explores how peers on a sports team can actually be damaging to the experiences of some. He indicates that the peer relationship literature is comprised of two broad research emphases, friendship and peer acceptance. "Friendship pertains to close dyadic relationships while peer acceptance is one's degree of social acceptance, liking, or status within the peer group" (Smith, p. 28). With respect to peer acceptance, Smith emphasizes that anxiety can stem from the need to make a positive impression and ensure that this impression leads to greater acceptance from peers. Specifically, he refers

to this as social physique anxiety. "Social physique anxiety is a specific form of social anxiety that emanates from the potential for or presence of evaluation of one's physique by others" (Smith, p. 33). To put it into perspective, higher social anxiety is expected out of youth with lower peer acceptance because of their perceived inability to make positive impressions on their peers.

On the other hand, one may also ask what role peers play in one's overall positive experience of playing a sport. Smith (2003) found that cooperation and support in an activity from friends (and parents) contributed positively to youth physical activity. Furthermore, Smith believes that we should utilize the context of an activity in order to promote the benefits of positive peer interactions in sports. "Because high quality peer relationships are of value in themselves and may translate to positive health-related outcomes, the development of effective and efficient ways to use physical activity contexts to promote peer relationships is a worthy pursuit" (p. 35). What Smith called mastery motivational climates, understood in this study as task-involvement climates, directed the attention of youth toward personal improvement, effort, and cooperation with each other rather than normative performance comparisons and competition. These particular social climates can allow for higher quality relationships to develop by reducing the potential for interpersonal conflict.

Wenztel's (1999) study, occurring in a classroom setting, also explored how youths influence each other when cooperating on tasks. Wentzel found that, with respect to the task-involving environment, peers hold each other accountable for certain behaviours such as offering help and sharing knowledge and expertise. Furthermore, Wentzel argued that, in a task-involving setting, peers specify sets of goals they would

like and expect each other to achieve. With respect to the ego-involving climate, it should be noted that motivation to perform better can be a result of the emphasis that peers place on winning and out performing their peers (Harwood & Swain, 2001).

Additional studies on the effect of peers in a sports context indicate that positive peer relations can lead to benefits resulting from sports participation. Weiss and Duncan (1992) indicate perceived and actual competence in youth sports is strongly related to success in peer relations and perceived acceptance by peer groups in these sports. Moreover, Duncan (1993) explains that both children and adolescents who believe they are regarded as competent in a sport by their peers have been found to exhibit higher performance-related positive affect. Though it will be explored later, positive affect can be understood at this point as positive feelings or emotional states. Also important to note is that peers have emerged as being particularly influential during early adolescence as a source of competence information (Horn & Amorose, 1998). Adolescence is understood by these authors as the period between the ages of 10 and 18 years.

Motivational Climate

As stated in Vazou et al. (2005) "the term motivational climate refers to perceptions of situational motivational cues and expectations that encourage a particular goal orientation, and at a given point in time, induce a certain goal involvement state" (p. 498). These goal involvement states are understood in this and many other studies as task- and ego-involved motivational climates. It should be noted however that the situational motivational cues in a sports context often studied have typically been coaches, physical education teachers, or parents. Peers as a significant motivational cue

has been explored fairly recently in research, and as a result are not included in earlier studies that are about to be reviewed.

Gill (2000) examines the history of research pertaining to motivational climate in his work in much depth. This starts with Atkinson (1964) who proposed the idea of high achievers and low achievers as related to motivation. This author explains that high achievers are those who seek out challenging achievement situations and are more motivated to achieve success rather than avoid failure. On the other end of the spectrum low achievers are motivated to avoid failure and achievement situations. Gill argues however that there are many holes in this theory especially when you consider people in between the high and low achieving constructs.

Gill (2000) proposes that this gap in Atkinson's (1964) research could be filled by considering Veroff's (1969) steps of achievement motivation throughout the lifetime from childhood to adolescence. This author's theory also has some significant implications that seem to have led to the concept of motivational climate. The first step of achievement motivation is called autonomous competence which refers to setting one's goals, achieving them, and evaluating one's performance all on one's own. The next step is social comparison in which social standards and competition become factors in how one judges their competence. This seems to be very similar to how one operates in an ego-involved sports environment where social comparison is prevalent (Ames, 1992). The third step is integrated achievement, the most superior or mature step, where one is able to use either autonomous competence or social comparison when the situation calls for them.

Veroff (1969) urges that not everyone will make it through all three stages of achievement motivation development. For instance, those who do not master the autonomous stage can be characterized as low achievers who do not typically judge themselves as either competitive or cooperative. However, those who master autonomous competence but not social comparison possess slight but minimal qualities of what could be called a high achiever. These individuals are characterized as being competitive. These may also be the ego-oriented individuals who are responsible for creating and promoting ego-involved climates which are also highly competitive in nature (Ames). On the other hand, those who master both autonomous and social comparison stages, and have therefore entered the integrated achievement stage, are characterized as being both competitive and cooperative (Veroff). This stage may characterize the task-oriented individuals who are responsible for creating and promoting task-involved climates since these climates are cooperative in nature, even during a highly competitive sport (Ames, 1992). Veroff would also note that if one masters both autonomous and social comparison stages, but uses social comparison for normative purposes, then they are unable to move on to the integrated achievement stage and are characterized as being overly competitive. It may also be appropriate to classify these individuals as ego-oriented since they compare themselves to others for normative purposes, which is a typical quality of an ego-involved motivational climate (Ames, 1992).

Ames (1992) was very instrumental in contributing to the body of knowledge behind motivational climate proposing the two types of motivational climates being explored in this research. First is a mastery- (task-) involving motivational climate that

encourages effort and rewards task mastery and individual improvement. As stated by Ames:

> When individuals are mastery-oriented, they are focused on developing new skills, improving their own level of competence or skill, or attaining a sense of mastery based on an internalized set of standards. One's sense of efficacy is based on a belief that effort will lead to personal progress and mastery. A mastery goal orientation, then, is viewed as promoting a motivational pattern that places high value on effort and the process of learning (p. 162).

Another way to put a task-involved climate into perspective has been referred to by both Ames and Ntoumanis and Vazou (2005). These authors provide a guide on how a task-involving climate can be created or promoted along the dimensions of task, authority, recognition, grouping, evaluation, and time and are otherwise known as TARGET:

> In a task-involving climate, activities that make learning interesting and involve variety and personal challenge are promoted (task), athletes are involved in the decision making and have a choice of tasks (authority), rewards are perceived as informative and recognition is provided based on personal improvement and progress (recognition), opportunities for cooperative group learning and peer interactions are provided (grouping), evaluation is based on personal improvement and task mastery (evaluation), and the time allocated for completing learning activities is adjusted to meet the athletes' needs (time) (Ames, 1992, p. 173).

> The second motivational climate proposed by Ames is a performance- (ego-) involving motivational climate which fosters social comparison and emphasizes

normative ability, and outperforming others. Since Ames, many researchers have worked with the concepts of task- and ego-involving motivational climates and many findings have been uncovered relating to the outcomes associated when athletes perceive either type of climate. For instance, Ntoumanis and Vazou (2005) reveal that, based on their previous research, a task-involving climate is usually associated with positive motivational outcomes such as enjoyment, interest, performance improvement, and performance satisfaction. These authors also explain that this body of knowledge associates emphasis on ego-involving climates with feelings of anxiety, dysfunctional attributions, reduced effort, and other maladaptive outcomes. This relates interestingly with Smith's (2003) research as these negative outcomes were also reported by athletes who perceive low peer-acceptance on their sports teams. This suggests a relationship between ego-involved peer motivational climates and perceptions of low peer-acceptance.

Ames' (1992) conception of both task- and ego-involved climates is based on the Achievement Goal Theory in which the research suggests that the goals of athletes are either task-oriented or ego-oriented. To avoid confusion, when the term orientation is used as the suffix (task-orientation and ego-orientation) instead of involvement we are referring to the type of goal-orientation an athlete has when performing in physical activity, which reflects how they subjectively define success, as opposed to the motivational climate that they perceive. However it should be noted that one's goal orientation can be determined by motivational climate similar to how motivational climate is determined by the goal orientation of the individuals within. For example, environments emphasizing effort, learning, and improvement tend to encourage a task-

goal orientation in individuals. This, in turn, provides a greater opportunity for individuals to feel successful and develop adaptive achievement behaviours and positive self-perceptions (Ames, 1992).

Duda and Ntoumanis (2005) wrote a very informative piece on this concept of goal orientations and helped conceptualize the task- and ego- orientations of athletes. The way athletes go about performing in sports and achieving their goals is different in several ways. First, athletes judge their competence in a sport using two completely different customs depending on whether or not they are task-oriented or ego-oriented. For those whose goals are task-oriented, their perception of competence is based on how effectively they are able to accomplish goals, realize learning, improve, and do their best. For those whose goals are ego-oriented, their competence is judged based on "superior ability over others by outperforming them or performing equivalently with less effort" (Duda & Ntoumanis, p. 314). Secondly, in terms of the nature of one's sport ability, task-oriented individuals view sport ability as incremental, unstable and the product of learning. Ego-oriented individuals view sport ability as a gift and that sport ability generalizes across different sports. With this ego-oriented mindset, an individual who is competent in one sport is automatically competent in all sports, though this may not exactly be true due to the diversity of skills inherent with specific sports.

Thirdly, Duda and Ntoumanis (2005) write that, in terms of one's purpose of sport participation, task-oriented individuals believe that sport participation should foster cooperation, striving for mastery, skill development, and lifetime health. The attentive reader will notice that these purposes appear to be motivators of sport participation that are intrinsic in nature. In contrast, ego-oriented individuals believe that sport should

enhance social status, self-importance and career mobility. These are more extrinsic motivators of sport participation. Fourth, task oriented individuals are more committed to practice, more involved in physical activity and use skill development strategies to a greater extent. Ego-oriented individuals, on the other hand, tend to avoid practice, avoid utilizing physical activity when it is not needed and avoid the use of skill development strategies.

Duda and Ntoumanis (2005) also explore some of the outcomes of sports involvement for individuals who are task- and ego oriented. First, they explain how positive and negative affect (emotional states) occurs from individuals in each goal-orientation. In terms of those who are task oriented, positive emotions come from sport participation since personal improvement is valued more. As a result, these individuals are more likely to experience satisfaction and enjoyment as opposed to boredom. In addition these individuals will also experience less anxiety (if any) before a sporting event such as a tournament. This is likely because they are less focused on whether or not they will win and are more focused on playing to the best of their abilities, a goal which is more easily attained. For ego-oriented individuals, positive emotions come only from out-performing others. They also experience more tension and anxiety when they feel their self-worth is under threat or before a sporting event such as a tournament. With that said, Duda and Ntoumanis stress that ego-oriented individuals can also experience satisfaction and enjoyment in sport participation. However, one may ask if it is a different kind of satisfaction than what is experienced by task-oriented athletes since it is the result of outperforming other athletes as opposed to cooperating and improving upon one's skills. Since positive affect is being explored as a dependent variable in this current study

this information could prove useful in foreshadowing what results will occur when affective states are being compared to task- and ego-involved peer motivational climates.

Goal orientation research in sports has been prevalent over the years, especially since the conception of the 13 item Task- and Ego-Orientation in Sport Questionnaire (TEOSQ) by Duda (1989) stemming from the work of Nicholls (1989). The TEOSQ has been well established as one of the best, most reliable and most common tools in assessing individual differences in their emphasis of task and ego involving criteria for defining success in athletic settings (Castillo et al., 2009). It would be worth mentioning that the TEOSQ is used in this study as well as a measure of sport orientation as a covariate.

In light of having a reliable tool for operationalizing goal orientations, research on this topic has taken two different approaches First, it has "examined the correlates of different goal orientations and has established impressive evidence that different goals are associated with different patterns of cognition and affect" (Ames, 1992, p. 163). Secondly it has "studied how the structure and demands of a learning environment can evoke different goal orientations, and, as a result, different motivational patterns" (Ames, p. 163). While the former likely has important implications on the study of sport participation, the latter is more concerned with the topic under discussion, the motivational climate. In addition, Duda and Ntoumanis (2005) stress that "research on achievement goals in sports has examined the motivational climate created by mainly two influential social agents, coaches and parents" (p. 316). It seems that little research here has been concerned with peers. These authors explain that coaches and parents who are task or ego- oriented tend to be related to children/youth on sports teams having the same

respective orientations. However, the research that these authors conducted found that coaches and parents are not the only contributors to the motivational climate manifested in after-school youth sport. "Peers, sport heroes and the media also transmit task- and ego-involving criteria for success" (Duda and Ntoumanis, p. 316). It is clear that both Ames and Duda and Ntoumanis recognize the importance of including peers as elements to be studied in research concerning motivational climate.

There is an important question to be posed at this point; what exactly is the relationship between goal orientation and motivational climate? To answer this question it would be helpful to directly examine research exploring the relationship between the goal-orientations of individuals and their motivation. Ames' and Archer's (1988) research in the classroom attempts to answer the question of whether or not the goal structure of an achievement setting impacts motivational patterns. Though far from a sports setting, what was discovered in this classroom setting was a strong relationship between task-goal orientation and motivation. Students who saw their experiences as mastery- (or task) oriented were more likely to use effective strategies, to prefer challenging tasks, to like their class more, and to believe success is a result of effort (Ames & Archer). This result was strengthened in Ames (1990) when they found that this task-orientation (over a time span of three years) created a more task-involved motivational climate and, as a result, enhanced performance in the classroom. These results show a direct link between goal-orientation and motivation in that task-oriented individuals tend to promote more task-involved environments. One can assume that individuals who are more ego-oriented would also end up creating a more ego-involving motivational climate as was eventually determined by Vazou (2010).

The Effect of Peers on Motivational Climate

Peer motivational climate encompasses both the concepts explored thus far, the effect of peers on athletic experiences and goal orientation on motivational climate. Vazou et al. (2005) were among the first to help conceptualize peer created motivational climate in their research. In their qualitative research of youth sport athletes, these authors discovered 11 dimensions of peer motivational climate. The concept of peer created motivational climate along with the task- and ego-goal orientation of the individuals within these contexts are exemplified in these 11 dimensions. The first group of dimensions to be discussed is those of a task-involving peer-created motivational climate. The emphasis of the first dimension is on individual improvement which concerns encouraging and providing feedback to teammates to improve. The second dimension is equal treatment of teammates in which everyone has an important role in the team and all athletes treat their teammates in a non-preferential way. Relatedness/support is the third dimension under discussion and is defined as the fostering and facilitation of the feeling of belonging and being part of a group as well as the creation of a friendly atmosphere in the team. The fourth task-involving dimension is cooperation which is defined here as helping each other and working together. The last task-involving dimension emphasizes maximum effort. The Effort dimension refers to the extent to which athletes emphasize to their teammates the importance of exerting effort and trying their hardest.

Also found in this study by Vazou et al. (2005) were the dimensions of an ego-involving peer created motivational climate. The first is Intra-team Competition which is characterized by striving to outperform and compare with other teammates. The second dimension is Intra-team Conflict which is the negative and unsupportive behaviors

exhibited by teammates. Specifically, this is characterized by actions such as blaming others for poor performance, making negative comments that put teammates down and emphasizing teammates' weaknesses. The last ego-oriented dimension is inclination for normative ability which refers to the tendency to give preference towards the most competent teammates. This is observed on teams that make the most competent players play a more central role as opposed to promoting equality between teammates.

Several of the dimensions proposed by Vazou et al. (2005) were related to both task- and ego- involving peer created motivational climates and could encompass the qualities of either. The first of these is the extent of autonomy support which reflects the desire to engage in activities of one's own choosing and to be the origin of one's own behavior. As indicated, this could go one of two ways. The task-involved climate would nurture autonomy while the ego-involved climate would encompass more controlling behaviors and expectations. The second of these dimensions is teammates' reactions to mistakes. In task-involving climates one could observe teammates offering encouragement after one makes a mistake. In contrast, ego-involving climates are characterized by those who worry about teammates' reactions when making mistakes. In addition, other teammates in this climate may respond negatively to those who make mistakes (i.e. blaming them). The last of these dimensions is the criteria for one's evaluation of competence. In a task-involved climate evaluation can predominantly be based on personal improvement and task mastery. In an ego-involving climate evaluation is based on normative criteria and positive peer interaction or anything related to how one is viewed in comparison to others. Table 1 lists the eleven dimensions along with results from the study conducted by Vazou et al. (2005) indicating the number and percentage of

their athlete participants (N = 30) from many different sports that indicated experiencing

a lower order version of these higher order dimensions listed .

Table 1

Content Analysis of the Dimensions of Peer Motivational Climate

Dimensions of Peer Motivational Climate	N	%
Task-Involved Climate		
Improvement	30	100
Equal Treatment	29	97
Relatedness support	29	97
Cooperation	27	90
Effort	26	87
Ego-Involved Climate		
Intra-team Competition	26	87
Intra-team Conflict	13	43
Normative Ability	25	83
Task- & Ego-Involved Climate		
Autonomy Support	25	83
Mistakes	29	97
Evaluation of competence	21	70

(Vazou et al., 2005)

Measuring Peer Motivational Climate

Ntoumanis and Vazou (2005) created the Peer Motivational Climate in Youth

Sport Questionnaire (PeerMCYSQ) in response to research that has indicated the need for

further examination of peer motivational climate. This questionnaire was created using the 11 peer motivational climate dimensions derived from the qualitative research from Vazou et al (2005). However, this questionnaire was subjected to several tests of reliability and validity eventually reducing it to five dimensions. Before this tool there were no measures of task-involving or ego-involving peer influence on motivational climate (Ntoumanis & Vazou). Though it is possible to simply reword measures of coach and parental influence, one could risk overlooking the unique aspects that peers bring to athlete motivation. In response to their concerns, Ntoumanis and Vazou developed and validated the PeerMCYSQ in a series of three studies (all reported as part of one larger research study) to construct this measurement tool. Evidence was provided in their work for its content and factorial validity, as well as its internal consistency and test-retest reliability suggesting that it is an appropriate measure for peer motivational climate.

The purpose of Ntoumanis and Vazou's (2005) first study was to develop a sport-specific measure of peer motivational climate and to examine its content and factorial validity. First, experts in the field of motivation in sport were presented with the lower order themes from the research conducted by Vazou et al. without being aware of which of the 11 dimensions they belonged. This original list of 81 items was, as a result, reduced to 64 items. The items were then pilot tested with a small sample of youth in order to assess how well they were able to understand the items. As a result, final modifications were made to the wording of some items. Next, an exploratory factor analysis was conducted and all items with high cross-loadings and low factor loadings were deleted resulting in a 34 item set with six dimensions remaining, some task-oriented (Improvement, Relatedness, Effort), and some ego-oriented (Intra-team competition,

Normative ability, Intra-team conflict). After this, an item analysis removed one item in Effort which did not meet the criteria. A further step in this study was a Confirmatory Factor Analysis which eliminated six more items that were found to be problematic reducing this set to 27 remaining items.

The purpose of Ntoumanis and Vazou's (2005) second study was to confirm the factor structure of the scale that was obtained in the first study with an independent sample. However, autonomy support items were re-added to this scale for further testing. After this questionnaire was administered, further exploratory and confirmatory factor analyses were conducted. This resulted in the elimination of all the autonomy items and further elimination of five of the remaining items resulting in a 22 item set. However it was also observed that high correlation and low internal reliabilities were found between the dimensions of Intra-team Competition and normative ability. After combining these factors into one dimension (and removing an item from normative ability) a good fit was found for the 21 items of five dimensions of peer created motivational climate (Improvement, Relatedness/Support, effort, Intra-team Competition, and inter-team competition).

The purpose of Ntoumanis and Vazou's (2005) third study was to test the two first-order models examined in the second study with an independent sample. After the PeerMCYSQ with five dimensions and 21 items was administered, confirmatory factor analyses were carried out. This tested the five factor 21 item PeerMCYSQ (M2) with the item set from the second study that still contained the 6 factors and 22 items (M1) and 3 additional proposed models (M3-M6). It was found that the five factor, 21 item PeerMCYSQ (M2) was still the best fit. Additionally, a multilevel CFA was conducted to

simultaneously test the within-team and between-group factor structure of the questionnaire. Despite some group variations in the perceptions of peer climate, the factor structure of the questionnaire was the same at both the within- and between-team levels. Lastly, test-retest reliability was conducted on this questionnaire establishing temporal stability of this questionnaire over a four week period.

In summary, this questionnaire has 21 items and five categories, three of which concern task involving environments: (1) Improvement, (2) Relatedness/Support and (3) Effort, and two which involve ego-involving environments: (4) Intra-team Competition (normative) ability and (5) Intra-team Conflict. These are based on the 11 dimensions of peer motivational climates derived from Vazou et al. (2005). Normative ability was fused with Intra-team Competition as a result of studies two and three. Autonomy was proposed but then dropped from the questionnaire themes as a result of studies two and three. The other four dimensions were dropped from the questionnaire for empirical reasons in study one (Ntoumanis and Vazou, 2005). This final five dimension and 21 item questionnaire was deemed to be the most reliable and valid measure of peer motivational climate with a temporal stability of four weeks.

Utilization of the PeerMCYSQ

Though fairly new, four notable studies have utilized the PeerMCYSQ in order to add to the body of knowledge behind peer motivational climate. One of these is the study conducted by Vazou (2010) who looked at perceptions of peer and coach motivational climate in terms of a task-involved and ego-involved climate. Many variables were measured but part of what was discovered was significant in further defending the relationship between that of goal-orientations and peer motivational climate. Specifically

what was found is that athletes' ego-orientation was positively related to athletes

perceiving an ego-involved peer-created motivational climate. In addition it was found

that athletes' task-orientation was positively related to their perceptions of a task-

involved climate. It would also be important to note that these task-involved teams were

significantly more successful in their respective sports.

Vazou, Ntoumanis, and Duda (2006) had various significant findings when testing

the newly created PeerMCYSQ. The first of these findings was that perceptions of a high

task-involving peer motivational climate predicted physical self-worth. A second finding

was that enjoyment was predicted positively by perceptions of high task-involved

climates. This is similar to earlier results found in a study by Duda and Nicholls (1992)

which, though not using the PeerMCYSQ, also determined that enjoyment and

satisfaction were associated with task-involved climates. Though this particular study by

Duda and Nicholls occurred in a class room setting, the translational nature of the task-

and ego- involvement constructs between athletic and educational contexts is evident. A

third finding was that men tended to perceive more ego-involving climates on average

while women mainly perceived more task-involving climates on their sports teams

(Vazou et al., 2006). This happens to be the same results as those found by White and

Duda (1994) who also determined that women tend to perceive task-involving

motivational climates as opposed to men who tend to lean towards perceiving more ego-

involving motivational climates. These findings are very significant in demonstrating

how perceptions of the peer-created motivational climate can be dependent on

demographic factors such as gender. As will be explained further in chapter three, this

study was intent on controlling for demographics factors, including gender, in the analysis as well.

Smith, Gustafsson and Hassmen (2010) conducted a very complex study which reported many relationships between many variables. However, to avoid going beyond the scope of this research, the most helpful findings derived for this study concern correlates of the task-involved climates that they measured. Perceptions of high task-involved peer created climates had negative correlations with reduced sense of accomplishment and sport devaluation burnout perceptions. In addition, higher perceived stress occurring while playing a sport was associated with lower scores on all task-involving elements of the perceived peer-created motivational climate.

A more recent study utilizing the PeerMCYSQ was conducted by Joesaar et al. (2011) who explored the question of why drop-out rates in sports teams heighten during adolescence. This study tested a model proposed by previous researchers that social factors (peer-created motivational climate) predicted psychological mediators (autonomy, competence, relatedness), which in turn predicted motivation (intrinsic), which would then predict consequences (persistence or non-persistence in sports). Through a series of structural equation models what was found was that task-involving peer motivational climate was positively related to the satisfaction of the three basic psychological needs (perceived autonomy, perceived competence, and perceived relatedness) which are the precursors of intrinsic motivation and persistence in sports. In contrast, the ego-involving peer climate was negatively correlated with perceived relatedness and was not significant with either autonomy or competence. To put it simply, the satisfaction of these three

basic psychological needs, which occurs in task-involved climates, leads to intrinsic motivation which, in turn, leads to persistence in sports.

This study intended to expand the findings of these authors' research on peer motivational climate to recreational sports and add to the body of knowledge behind this concept. Findings from this study can further highlight the important role of the peer group as a source of influence on motivation in sports. In addition, this study sought to illustrate the importance of promoting a task-involved climate over an ego-involved climate. In particular, this study linked the two types of peer motivational climates, task- and ego- involved, to the two types of affective states that can result from sport participation, positive and negative affect. As will be explored, determining how affective states are influenced by the peer motivational climate, when participating in sports, could help determine whether or not peers influence the sport participation experience resulting in either pleasurable and enjoyable engagement or anxiety and overall distress.

Positive and Negative Affect

Positive and negative affect are the dominant dimensions in self-reported mood (Watson, Clark & Carey, 1988). As previously indicated, negative affect generally represents subjective distress and a broad range of negative mood states. On the other hand, positive affect reflects one's pleasurable engagement and a broad range of positive mood states. Based on this one may assume that both of these constructs are opposites of the same dimension of affective outcomes. However, Watson et al. stress that both affects are actually highly distinctive and can be represented as uncorrelated factors. In fact, these authors demonstrate that positive and negative affect are two completely different emotional states that can determine completely different psychological outcomes. For

example, Watson et al. state that "anxiety is essentially a state of high negative affect and has no significant relation with positive affect" (p. 347). Both positive affect and negative affect have important implications on sporting behaviours, as will be explored.

Measuring Positive and Negative Affect

The Positive and Negative Affect Schedule (PANAS) was developed by Watson, Clark and Tellegen (1988) in response to a large number of measures for positive and negative affect that have been shown to be unreliable and invalid tools of measurement. For the PANAS, usual questionnaires that contained a large amount of terms were shortened by categorizing similar terms together (ex. guilty, ashamed, blameworthy) through principal-components analysis. As is typical of questionnaire construction, items that had a high enough factor loading during analysis moved on to the next stage. The best and most statistically reliable and valid items were selected for the list of 10 positive affect and 10 negative affect terms. Each of the 20 items on the PANAS can be scored on a 5-point Likert scale which can be used as numerical ratio level measures of affect. As a result, the study conducted by Watson et al. found that the PANAS is a reliable, valid, and efficient means for measuring the two dimensions of mood, positive and negative affect.

The PANAS has been the object of scrutiny for many researchers who have found various reasons to test the usability of this scale. Specifically, many researchers have questioned whether the positive and negative affect items really are completely separate from, and uncorrelated to each other. Others simply wanted to determine whether it really was a reliable and valid measure of affective state (Crocker, 1997). Many studies would go on to test the reliability of this model but one in particular expanded the use of the

PANAS to determine its usability with a youth sample as opposed to the regular adult sample that it was designed for. This researcher, Crocker (1997), determined that the PANAS has an overall acceptable fit within a youth sport sample through confirmation of his hypothesized two-factor structure. Further expanding the usability of the model was Crawford and Henry (2004) who determined the usability of the PANAS with various demographic samples (i.e. different ages, income, backgrounds). These authors were able to further defend its internal consistency with these groups. From these studies one can imply that the PANAS does seem to be a valid and reliable measure of affective states for wide varieties of diverse samples.

However Robazza, Bortoli, Nocini, Moser, and Arslan (2000) also attempted to call the usability of the PANAS into question. In this study, experienced soccer players and volleyball players were drawn from semi-professional clubs in Italy. These individuals were experienced athletes with 6 to 12 years of semi-professional participation experience. Participants were asked what emotions they felt prior to and during competitions in their respective sports. Most of the items (60%) identified by athletes were not on the PANAS. Therefore one may ask that if most of the items in the PANAS were not identified by athletes involved in actual sport then is it still an appropriate tool of measurement? The study by Robazza et al. (2000) called the reliability and validity of the PANAS into question but does not eliminate the fact that it has passed reliability and validity testing various times. In the end, it is still one of the most widely used tools for obtaining data pertaining to affective states.

Uses for the Positive and Negative Affect Schedule (PANAS) in Sports

Since development of the PANAS it has been used in a wide variety of studies, professions, and contexts. Considering that it has existed for over two decades, it would be out of the scope of this research to touch on all of its uses over the years, whereas keeping on topic with its use in the leisure/sports context would seem more suitable. More specifically, the research being examined helped defend the predictions made in this current study furthering the proposed relationships hypothesized between the independent variables of peer motivational climate and the dependent variables of affective states.

Some notable findings include those by Chang and Wong (2008) whose data seem to suit the purpose of this research very well in terms of its focus on goal orientation. Specifically it was found that mastery goals (task-oriented goals) are more associated with positive emotions (otherwise known as positive affect). In addition, performance goals (ego-oriented goals) are more associated with anxiety, a concept which has been linked strongly with negative affect by Watson et al. (1988). These findings by Chang and Wong are very similar to the information provided earlier by Duda and Ntoumanis (2005). In particular, they both highlight the hypothesized results for this research, namely that perceived task-involved peer climates may be more related to positive affect while the ego-involved peer climates seem to be more related to negative affect.

Other notable findings were derived from a study conducted by McDonough and Crocker (2007). Through a series of structural equation models these authors found that the three basic psychological needs that were referred to earlier (competence, autonomy, relatedness) act as precursors to the positive affect and negative affect experienced by

individuals. Specifically, positive affect was directly and positively related to and predicted by competence and relatedness need satisfactions. To put it simply, once an athlete's psychological need for competence in a sport and relatedness with other athletes was fulfilled, they are more likely to experience positive affect. On the other hand, negative affect was predicted by autonomy and competence need satisfactions but within a negative relationship. Simply put, a lack of autonomy and competence experienced by athletes in a sport predicted states of negative affect. McDonough and Crocker also discovered that self-determined (intrinsic) motivation is positively related to positive affect and negatively related to negative affect.

These results offer an interesting finding when examined alongside the results explained earlier by Joesaar et al. (2011) if affective states took the place of persistence in that study. Joesaar et al. explained that higher perceptions of task-involved climates were related to higher perceptions of psychological needs being satisfied and intrinsic motivation which according to McDonough and Crocker predicts positive affect. Conversely, Joesaar et al. also explained that higher perceptions of ego-involved climates were related to lower intrinsic motivation which according to McDonough and Crocker predicts negative affect. Combining the results of these two studies adds to the strength of the prediction proposed by this study that task-involved climates will predict positive affect while ego-involved climates will predict negative affect.

On the topic of motivation, Gagné, Ryan, and Bargman (2003) conducted research on the well-being of gymnasts that link affective states to autonomous and controlled forms of motivation. To clarify, affective states are understood in their research as one of the indices of well-being impacted by sport experiences. It was found

that autonomous (intrinsic) motivation was positively related with average pre- and post-practice positive affect, whereas controlled forms of motivation (introjected and external) and amotivation were positively related to average pre- and post-practice negative affect. Based on these results it appears that positive affect is associated with more autonomous forms of motivation, whereas negative affect is associated with more controlled forms of motivation. In addition, Gagné et al. found that instability of (or low) positive affect tended to be positively correlated with external regulation and amotivation. In contrast, instability of (or low) negative affect was negatively correlated with intrinsic motivation.

One last notable study to review would be that of Rogatko (2009). Sixty-eight undergraduate students from a mid-sized university participated in a study that measured and compared their flow states to their affective states. Participants indicated 10 activities that they commonly participated in and ranked them highest to lowest in terms of which activities made them feel the qualities of a flow state the most (i.e. focused, losing track of time, accomplishing something challenging). One group participated in their top three 'high flow' induction activities while the other group participated in their 'low flow' induction activities but both were asked to fill out the PANAS and the FFS-2 (a flow measurement tool that detected increase or decrease in flow before and after these activities) before and after their respective activities. Results from the participants in the high flow induction group reported a greater increase in positive affect from before till after their participation in these activities than those in the low flow induction group. However, it may be notable to indicate that the participants in the high flow induction group did not experience a significant decrease in negative affect. Additionally, participants who had a greater increase in flow from before until after their activities

would report a greater increase in positive affect. Conversely, participants who had a greater increase in flow would report a greater decrease in negative affect.

The useful information that one can take from this study is that experiencing flow in an athletic environment can lead to positive benefits such as positive affect, the same dependent variable being measured for this study. This could have implications for the results of this research since a flow state can likely flourish in a task-involved peer climate which is hypothesized in this study as conducive of positive affect. Rogatko (2009) indicates a quality of flow that seems similar to the experience of a task-involved environment, specifically, feeling in control of their environment because they possess the skills needed to overcome the challenge. In addition, in order for flow to occur one typically should be involved in a high challenge activity and utilize a high capacity of skills in order to achieve this challenge (Nakamura & Csikszentmihalyi, 2002). This is contrary to an ego-involved climate in which an individual wishes to use as little skill as possible to achieve their goals. Based on these similarities, Rogatko's research on flow's positive relationship with positive affect and negative relationship with negative affect reflect the similar results found between task- and ego- involved peer motivational climates and affective states in this study.

Potential Demographic Covariates

Aside from the social-psychological factors being focused on in this research, it is apparent that there are likely other, more objective, factors to take into account as well. The positive or negative affective states individual's experience along with the types of motivational climates they are more susceptible to perceiving can be affected by one's gender, age, ethnicity, and year of study at the institution. Additionally, program specific

factors such as level of competition, program gender composition, and whether or not individuals won, tied, or lost their last game could affect the results of this study as well. These factors will be taken into account and included in the study's analyses as covariates.

It has been suggested that age and gender differences can exist in one's perceptions of motivational climates. Typically, females and younger athletes perceive stronger task-involving climates than their male and older counterparts (Vazou et al., 2006). Vazou et al. reported that males perceived higher ego-involving climates than females who perceived higher task-involving climates. Also, older males differed significantly from females on perceptions of ego-involvement, in which they perceived more of it, while younger males did not differ significantly from females. Additionally, the study conducted by Smith et al. (2010) is very similar in that they also suggest that males typically scored higher on the ego-involving aspects of the PeerMCYSQ (Intra-team Competition and Intra-team Conflict) whereas females scored higher than males on the Effort facet of task-involvement. These results highlight that age and gender may impact views on peer motivational climate and should be accounted for in this study's analyses between the independent and dependent variables.

Rogatko's (2009) study looking at positive and negative affect resulting from the flow experiences of university students also agrees that gender and age should be taken into account in analysis. However this author also highlights year of study in the post-secondary institution and ethnicity as having an impact on perceptions of positive and negative affect as well and stresses the importance of accounting for these in analysis. Bryant, Banta and Bradley (1995), though not looking directly at motivational climate or

affective states, also indicate how student's ethnicities (i.e. Caucasian, African American, Asian American) affect how they perceive benefits occurring from campus recreation programs. The importance placed on certain benefits of recreational sport (i.e. self-confidence, physical well-being, sense of accomplishment), in addition to the extent to which individuals perceived these benefits from participation differed among the ethnicities that participated in their research. Since factors such as ethnicity and year of study could potentially impact one's perception of outcomes of recreational sport participation it seems logical to include these in this study's analyses as covariates as well.

Level of competition has not been examined much in research concerning peer motivational climate and positive or negative affect. This is a rather unique aspect of intramural sports in that programs are offered to individuals of all skill levels. However a study by Kanters and Forrester (1997b) has shown that levels of competition can make an impact on the psychological outcomes of participants, in this case self-esteem levels. Specifically, individuals at higher levels of competition showed lower levels of self-esteem than those in lower levels of competition. If such an aspect can affect how participants perceive their self-esteem then it also seems logical that it may affect the positive or negative affective outcomes that they experience from intramural sports as well and should therefore be controlled for.

Previous research has only focused on single gender sports (i.e., male only or female only sports) and has not studied any co-educational (co-ed) sports where teams consist of both males and females. Since many of the intramural sports being investigated in this study are co-ed, offered to both males and females allowing them to compete

against each other, the gender composition of the program was included as a co-variate. This aspect was suspected of possibly having an impact on the results of this study. In addition, whether individuals won, tied, or lost their last game was a covariate that was included in this research simply because of the nature of data collection. Since positive and negative affect was being measured directly after participation in an individual's intramural sport program, it seemed logical that whether they won, tied, or lost their last game could have an impact on the individual's mood state. Knowing that not accounting for such a factor could affect the results between the variables being examined in this study (peer motivational climate and affective outcomes) it was felt that individuals should indicate whether they won, tied or lost their last game, and that this variable should be accounted for in the analysis.

Summary

Starting with an overview of peer motivational climate, this chapter has aimed to provide the necessary background knowledge for this study. This information demonstrates both the need for, and direction of this research. Using the PeerMCYSQ, this study statistically analyzed the task-involved and ego-involved peer motivational climates experienced by participants of a university based intramural sports program. These were then analyzed alongside the dimensions of positive and negative affect which was measured using the PANAS. As this literature review has already explained, both the PeerMCYSQ and PANAS have been deemed reliable and valid measures of peer motivational climate and affective states. When a motivational climate is task-involved it should lead to benefits such as positive affect. Conversely, when a motivational climate is ego-involved it should lead to more negative consequences such as negative affect.

Findings from this study should highlight the important role that participants, team captains or intramural sport programmers have with regards to promoting a task-involving motivational climate to ensure a greater quality experience with sport participation. In addition, this research examined the utility of the fairly new PeerMCYSQ which has had relatively little use in sports related research to date.

Research Questions and Hypotheses

This study was designed to answer the following four research questions while the hypotheses that follow indicate the predicted findings that can occur in response to these research questions:

1. *What is the relationship between the two dimensions of peer motivational climate, task-involved climates and ego-involved climates, and the two aspects of affective outcomes, positive affect and negative affect?*

Hypotheses:

- H1.1: Positive affect will be positively related to task-involvement and negatively related to ego-involvement.

- H1.2: Negative affect will be negatively related to task-involvement and positively related to ego-involvement.

2. *What is the relationship between the five domains of peer motivational climate (Improvement, Relatedness/Support, Effort, Intra-team Competition and Intra-team Conflict) and the two aspects of affective outcomes, positive affect and negative affect?*

Hypothesis:

- H2.1: Positive affect will be positively related to Improvement, Relatedness/Support and Effort and negatively related to Intra-team Competition and Intra-team Conflict.

- H2.2: Negative affect will be negatively related to Improvement, Relatedness/Support and Effort and positively related to Intra-team Competition and Intra-team Conflict.

3. *Are there significant differences in positive and negative affective outcomes of intramural sports participation between high, medium and low levels of task-involved peer motivational climates?*

Hypotheses:

- $H3.1_0$: There is no significant difference between high, medium and low levels of task-involved peer motivational climates and the positive affective outcomes of participating in intramural sports.

- $H3.1_1$: There is a significant difference between high, medium and low levels of task-involved peer motivational climates and the positive affective outcomes of participating in intramural sports.

- $H3.2_0$: There is no significant difference between high, medium and low levels of task-involved peer motivational climates and the negative affective outcomes of participating in intramural sports.

- $H3.2_1$: There is a significant difference between high, medium and low levels of task-involved peer motivational climates and the negative affective outcomes of participating in intramural sports.

4. *Are there significant differences in positive and negative affective outcomes of intramural sports participation between high, medium and low levels of ego-involved peer motivational climates?*

Hypotheses:

- H4.1$_0$: There is no significant difference between high, medium and low levels of ego-involved peer motivational climates and the positive affective outcomes of participating in intramural sports.

- H4.1$_1$: There is a significant difference between high, medium and low levels of ego-involved peer motivational climates and the positive affective outcomes of participating in intramural sports.

- H4.2$_0$: There is no significant difference between high, medium and low levels of ego-involved peer motivational climates and the negative affective outcomes of participating in intramural sports.

- H4.2$_1$: There is a significant difference between high, medium and low levels of ego-involved peer motivational climates and the negative affective outcomes of participating in intramural sports.

Methods

The intent of this study is to examine the impact of peer motivational climate on the affective outcomes of participating in intramural sports. Each of the following are discussed to describe the methods employed in this study: (a) design, (b) participants, (c) ethics, (d) materials, (e) reliability and validity, (f) procedure, and (g) data analysis.

Design

This is a descriptive, non-experimental, quantitative survey study utilizing a questionnaire with results being measured numerically. The first eight items on the survey are demographic in nature while the next 13 items measure orientation towards sport participation. Both demographics and orientation towards sports are analyzed in this study as covariates. The next 21 items measure the independent peer motivational climate variables, while the last 20 items measure the dependent variables of participants' affective outcomes of participation. These sections of the survey will be explored more in-depth later on. The investigation's design is also non-experimental, as there was no manipulation or control of the study environment. Considering how the independent variable being studied concerns a peer created motivational climate, as opposed to one created by a researcher, it was in the best interest of this research to allow participants to be in control of their own environment to ensure proper operationalization of this variable. Furthermore, the investigation is cross-sectional since data only represents the participants at a single point in time.

Participants

The study sample consists of university students who are also intramural sport participants. In order to achieve an accurate representation from the study that can be

generalized to the population, purposive sampling was used as the sampling technique of choice. Purposive sampling allows individuals an equal and fair opportunity to participate in the research as long as they are participating members of the intramural programs at the university being studied. To ensure that all individuals were intramural participants, surveys were distributed to students at the locations of the intramural games as they took place. In addition all individuals were asked to confirm that they were intramural participants. The researcher set up a recruitment table near where the various intramural games took place during several game nights, with surveys available, and invited the student intramural athletes to participate in the study. This table's specific location alternated on various intramural game nights but was typically found in the hallways outside the two gymnasiums where the indoor programs took place and on the intramural fields where the outdoor programs took place. Surveys were completed at the recruitment table. Free refreshments were offered to students as incentive for their participation in the survey.

Few limits were placed on the sample other than being intramural sport participants as this study proposed to survey individuals of both genders, of any age, in any year of study, and participating in any intramural sport. However it should be noted that only students who had just finished their game were recruited for the study as it is intended that the variables of positive and negative affective states are measured immediately after sports participation. This study did not intend to disrupt individuals who were about to start or were in the middle of their respective games. Participants were asked to complete a survey after their games at a table set up near where the intramural sport took place. There were several hundred students who could be reached with this

survey. Data collected was analyzed from the participants that responded to and completed the entire questionnaire.

Larger sample sizes generally represent populations better than smaller sample sizes. With regards to research utilizing regression analysis, Tabachnick and Fidell (2007) provide two equations that can help determine how large one's sample size should be. They indicate that when testing for the overall model, N should be greater than or equal to 50 + 8m (the number of independent variables). In addition, when testing for individual predictors, N should be greater than or equal to 104 + m. In peer motivational climate there are seven independent variables which include the five dimensions of the PeerMCYSQ, Improvement, Relatedness/Support, Effort, Intra-team Competition, and Intra-team Conflict, and the more general dimensions that they belong to, task- and ego-involved climates. This gives us the options of N = 106 (50 + 8[7] = 106) or N = 111 (104 + 7 = 111). Since Tabachnick and Fidell (2007) recommend choosing the larger number of cases, because they represent the population better, the latter option would typically be used as a target sample size.

However, Tabachnick and Fidell (2007) go on to explain that sample sizes should be significantly bigger if a factor analysis is conducted in research. With respect to factor analysis, a procedure carried out in this study to measure reliability and validity of the survey, Tabachnick and Fidell provide a guide of sample sizes stating 50 as very poor, 100 as poor, 200 as fair, 300 as good, 500 as very good and 1000 as excellent. However, Tabachnick and Fidell indicate that a sample size of at least 300 is sizable for a factor analysis as a general rule of thumb. While regression calls for 111 cases, a factor analysis requires a minimum of 300 cases. Since larger sample sizes are always more

representative of the population, and a factor analysis was carried out in this research, the

sample size was considered large enough once 300 surveys were collected. However,

survey distribution continued since more participants were willing to participate leaving

the final sample size a little larger than 300 (N = 338).

Participants were sought out during a three week period in the month of October,

2012 from several intramural programs that take place on campus. Survey distribution

occurred six times at nine different intramural programs that occur on campus during the

fall semester (some programs occur at the same location at the same time). Specifically

the 338 participants surveyed for this study were participants in co-ed 4's volleyball (n =

75), co-ed slow pitch (n = 29), co-ed flag football (n = 63), co-ed ultimate Frisbee (n =

21), 4's men's and 4's women's volleyball (n = 41), co-ed outdoor soccer (n = 65), co-ed

ball hockey (n = 13), and co-ed water polo (n = 8). Refer to table 2 for a list of intramural

programs that the study sample was drawn from including how many were surveyed from

each program.

Table 2

Survey Numbers

Sport/Program	Gender Composition	N
4's Volleyball	Co-ed	75
Slow Pitch	Co-ed	29
Flag Football	Co-ed	63
Ultimate Frisby	Co-ed	21
4's Volleyball	Men's/ Women's	41
Outdoor Soccer	Co-ed	65

Table 2 (continued)

Survey Numbers

Sport/Program	Gender Composition	N
Ball Hockey	Co-ed	13
Water Polo	Co-ed	8
Total		338

Co-ed slow pitch, and co-ed outdoor soccer were programs that occurred on Sundays during the morning and afternoon at the university's intramural fields. Co-ed outdoor soccer also occurs on Thursday nights due to the high participation rate of that program though participants were sought out on a Sunday. Outdoor soccer is also offered at this institution as Men's and Women's only programs on Monday afternoons. Co-ed ultimate Frisbee and co-ed flag football also occur at the university's intramural fields but on Wednesday afternoons. Flag football is also offered at this institution as Men's only on Tuesday afternoons. Co-ed ball hockey and co-ed 4's volleyball both occur on Tuesday nights in the university's gymnasiums. Co-ed 4's volleyball also occurs on Monday nights due to the high participation rate of that program though participants were sought out on a Tuesday night. Ball hockey is also offered at this institution as Men's only on Sunday afternoons and Monday and Thursday nights. Co-ed inner tube water polo occurs on Tuesday nights, in addition to Thursday nights, at the institution's large sized swimming pool. Participants of this program were sought out on a Tuesday night at the locations of the gymnasiums. Signage was used to direct co-ed inner tube water polo players to the location of the survey distribution table. Men's and Women's only

volleyball occur simultaneously on Wednesday and Thursday nights in the institution's gymnasiums, although participants of these programs were sought out on a Wednesday.

Within the nine programs in which participants were drawn for this study there were a total of 1969 students registered. Programs such as volleyball, slow pitch, and outdoor soccer demonstrate rather high participation rates consisting of a high portion of intramural participants. These programs also yielded the highest amount of surveys collected from participants. On the other hand, programs such as ultimate Frisbee, inner tube water polo, and co-ed ball hockey demonstrate rather low participation rates in comparison to the other programs offered at this institution. These programs also had lesser numbers of surveys collected from participants. Refer to table 3 for the total number of teams and participants registered for the programs surveyed during the 2012 intramural leagues at the institution studied.

Table 3

Total Registration Numbers for 2012 Intramural Leagues

Sport	Teams Registered	Participants Registered
Co-ed 4's Volleyball	61	306
Co-ed Slow Pitch	36	489
Co-ed Flag Football	16	146
Co-ed Ultimate Frisbee	9	76
Men's Volleyball	14	70
Women's Volleyball	21	120
Co-ed Outdoor Soccer	52	585
Co-ed Ball Hockey	6	56

Table 3 (continued)

Total Registration Numbers for 2012 Intramural Leagues

Sport	Teams Registered	Participants Registered
Co-ed Water Polo	12	121
Total		1969

Intramural Sports Program

The intramural sports program studied is run by the university where it is based. Participants include the undergraduate and graduate students and teachers that attend and are employed by the university. Intramurals run throughout the months of October and November (the fall semester) and February and March (the winter semester). During the fall semester there are 11 sports leagues held which include: slow-pitch baseball, flag football, ball hockey, basketball, outdoor soccer, ultimate Frisbee, singles badminton, volleyball (teams of four), inner tube water polo, singles tennis, and ice hockey. Later on in the semester tournaments are held for basketball, 4's volleyball, and ultimate Frisbee in addition to five sports which are not offered as leagues during the fall semester: floorball, European handball, squash, water volleyball and indoor soccer. During the winter semester nine sports leagues are held which include: underwater hockey, indoor soccer, dodge ball, doubles badminton, volleyball (teams of six), broomball, singles table tennis, soccer baseball, and ice hockey. Many of these programs are separated by gender (i.e. Men's Volleyball/ Women's Volleyball) while some are coed programs which allow men and women to play together (ie. coed volleyball). Many of the programs are also offered at different competition levels: Comp A for the most advanced players, Comp B for more amateur players, and in some cases a recreational level for beginners.

Ethics

This study follows several research protocols in order to remain ethical according to the standards of ethical research put forth by the Research Ethics Board (REB). First, the head of the university's recreational services, who acts as the gatekeeper to this sample, was contacted in order to get permission to survey intramural sport participants. This individual received a copy of the questionnaire to ensure that it is appropriate for use. Afterwards, an ethics application was sent to the board for approval since research cannot happen on campus without ethics clearance. Once deemed ethical and given clearance, surveys were administered to the research participants. Before taking the survey, participants were given a consent form informing them of their rights as research participants, assured them that the research has received ethics clearance, and indicated the estimated time it will take to complete the survey (10 minutes).

Once the participants completed their surveys they received a letter of feedback thanking them for their participation and ensuring them that their responses are confidential and anonymous. It also informs them that the outputs of the study will be made available to them upon request. Data collected during this study was kept confidential as it was put into a sealed envelope immediately after the participant completes it. This data was copied and coded onto a computer for data analysis purposes. In order to further ensure confidentiality the computer being used to store the electronic form of this data was password protected. In addition, a password protected external USB device was utilized for backup purposes and was in the researcher's possession at all times. Data will be kept for one year after the research is completed at which time the data will be deleted. Access to this data is restricted to the Principal Student Investigator

and the Faculty Supervisor. The data is also anonymous as no names or identifying information was collected from participants. Therefore, there is no way to associate participants with the obtained data in any way especially since average responses of the entire group are what was being sought out in this study. Participants were also informed of their right to withdraw from the study at any time, meaning that their data is deleted and not used for analysis.

Instrumentation

The survey used in this study contained three sections. The first section asks for general information from participants which are all used in data analysis as covariates. This includes demographic information: gender, age, ethnicity, year of study, whether it is a men's, women's or co-ed intramural sport, intramural division, and whether or not they won, lost or tied their last game (win/loss). This section also asked participants to indicate their orientation towards sport participation which is measured in this study using the 13 item Task and Ego-Orientation in Sport Questionnaire (TEOSQ) developed by Duda (1989). This questionnaire measures orientation towards sports participation, or in other words, how an individual participant defines success in sports, whether it be task- or ego-oriented criteria (Castillo et al., 2009). Responses to this questionnaire are recorded on a five-point Likert scale anchored by 1 (strongly disagree) and 5 (strongly agree). Seven of the items on this questionnaire went towards measuring task-orientation towards sport participation while the other six items measured ego-orientation. Examples of items that measured task-orientation included '*I learn a new skill and it makes me want to practice more*' and '*I learn something that is fun to do*'. Examples of items that measured ego-orientation included '*I'm the only one who can do the play or skill*' and

'Others mess up and I don't'. It was felt that participants' individual task- or ego-orientation towards sports participation may have a part in determining how they perceived their task-involved and ego-involved peer motivational climates. Therefore, these constructs (task-orientation and ego-orientation) were measured and included in data analysis as covariates along with the demographic information collected.

Peer motivational climate is measured in this study in the second section using the 21 item Peer Motivational Climate in Youth Sport Questionnaire (PeerMCYSQ) developed by Ntoumanis and Vazou (2005). This questionnaire assesses athletes' perceptions of the peer-created motivational climate on their intramural teams. These 21 items measure perceptions of task-involving and ego-involving factors along with their respective dimensions. Participants responded to a series of statements pertaining to their perception of the five dimensions of the peer motivational climate as they apply to them: (1) Improvement, (2) Relatedness/Support, (3) Effort, (4) Intra-team Competition (normative) ability, and (5) Intra-team Conflict. Next to each statement participants are instructed to indicate to what extent they agree or disagree using a seven-point Likert scale anchored by 1 (strongly disagree) and 7 (strongly agree).

The group of 12 items pertaining to perceptions of a task-involved climate include questions referring to the dimensions of Improvement, Relatedness/Support, and Effort. The group of nine items pertaining to perceptions of an ego-involving climate include questions referring to the dimensions of Intra-team Competition (normative) ability, and Intra-team Conflict. Examples of items forming the task-involving climate factor are "*work together to improve the skills they don't do well*" (Improvement), "*make their teammates feel valued*" (Relatedness/Support), and "*encourage their teammates to keep*

trying after they make a mistake" (Effort). Examples of items forming the ego-involving climate factor are: "*try to do better than their teammat*es" (Intra-team Competition/Ability) and "*laugh at their teammates when they make mistakes*" (Intra-team Conflict).

Participants' perceptions of positive and negative affect were also measured in order to assess their affective outcomes associated with their intramural sport experience. This is done using the Positive and Negative Affect Schedule (PANAS), a 20 item questionnaire consisting of two 10-item subscales, one measuring positive affect, and the other measuring negative affect (Watson et al., 1988). These 20 items are a series of adjectives that describe individuals' positive and negative feelings. Participants address how well these feelings apply to them in terms of their intramural sport participation by assigning each adjective a number from one to five. A one (1) would represent a weak association with having a certain feeling while a five (5) would present a strong association with having a certain feeling. Examples of words indicated on the positive affect scale include the terms *'interested'*, '*excited'*, and *'inspired'*. Examples of words depicted on the negative affect scale include terms like *'distressed'*, *'upset'*, and *'guilty'*. In order to ensure that these feelings accurately reflected their experience participating in their intramural sport program participants were sought out only when their games finished.

Reliability and Validity

Construct validity of the survey questions used to measure peer motivational climate is established as this research uses pre-existing survey questions constructed and validated by Duda (1989;TEOSQ), Ntoumanis and Vazou (2005; PeerMCYSQ) and

Watson et al., (1988; PANAS). The items from the PeerMCYSQ were also used effectively by Vazou et al. (2006), Smith et al. (2010), Vazou (2010) and Joesaar et al. (2011) when measuring for task-involved and ego-involved peer motivational climates. According to Ntoumanis and Vazou (2005) evidence from their development and validation of the PeerMCYSQ suggested that content and factorial validity as well as its internal consistency and test-retest reliability were consistent. Based on this, they indicate that these items can be used to examine research questions related to peer motivational climate in youth sports.

The authors that constructed the PANAS state that after conducting several tests of reliability and validity it was determined that "these 10-item scales are internally consistent and have excellent convergent and discriminate correlations with lengthier measures of the underlying mood factors" (Watson et al., 1988, p. 1069). Furthermore, these authors also note that these scales can demonstrate stability over a 2-month period as long as appropriate instructions are used. "When used with short-term instructions (e.g., right now or today) they are sensitive to fluctuations in mood, whereas they exhibit trait-like stability when longer-term instructions are used (e.g. past year or general)" (Watson et al., 1988, p. 1069). Crawford and Henry (2004) further defend the reliability and validity of the PANAS. They state that "the PANAS has been shown to possess adequate psychometric properties in a large sample drawn from the general adult population" (p. 262). Furthermore, they state that "the results from CFA modelling largely support the construct validity of the PANAS scales and the reliabilities of both scales were adequate" (p. 262).

Regardless of passed evidence of reliability and validity several tests were conducted on the three questionnaires being used in this study in order to assess their appropriateness with the university sample being surveyed. A factor analysis was conducted on the TEOSQ using the data collected to determine if the 13 items measured the two constructs that they were supposed to measure (task- and ego-orientation). This was determined if the seven items intended to measure task-orientation loaded predominantly onto one factor while the six items intended to measure ego-orientation loaded predominantly onto the second factor. Two factor analyses were also conducted on the PeerMCYSQ. The first test was conducted to determine if the tool measured the two constructs that it is supposed to measure (task- and ego-involved peer motivational climates). This was determined if the 12 items intended to measure task-involvement loaded predominantly onto one factor while the nine items intended to measure ego-involvement loaded predominantly onto the second factor. A second factor analysis conducted on the PeerMCYSQ determined if the items also effectively measured the five dimensions of Improvement, Effort, Relatedness/Support, Intra-team Competition, and Intra-team Conflict. This was determined if the items intended to measure their respective dimensions loaded predominantly onto their respective five factors. Lastly, a factor analysis was conducted on the PANAS to determine if the 20 items measured the two constructs that they were supposed to measure (positive and negative affect). This was determined if the 10 items intended to measure positive affect loaded predominantly onto one factor while the 10 items intended to measure negative affect loaded predominantly onto the second factor.

Cronbach's alpha reliability coefficients were also used to determine the reliability of the TEOSQ, PeerMCYSQ, and PANAS items. Scores for reliability were derived for each of the two constructs in the TEOSQ (task-orientation and ego-orientation), the two constructs in the PeerMCYSQ (task-involved and ego-involved peer motivational climates) along with the five dimensions (Improvement, Relatedness/Support, Effort, Intra-team Competition and Intra-team Conflict), and the two constructs of the PANAS (positive affect and negative affect). This test will determine whether removing items from these questionnaires results in higher alpha coefficients, and thus, a more reliable measure of any of these constructs. Each subscale should have an alpha level of 0.7 or greater to meet the criteria for acceptability (Tabachnick & Fidell, 2007).

Procedure

A survey measuring the variables of this study, peer motivational climate and affective outcomes, along with the covariates to be controlled for, gender, age, ethnicity, year of study, whether it is a men's, women's or co-ed program, win/loss, and task- and ego-orientation towards sports participation, was created. This questionnaire was then sent to the head of Recreational Services for permission to distribute the survey to intramural sport participants. Furthermore, this research sought clearance by the Research Ethics Board (REB) since this is needed in order for any research to occur at the post-secondary institution where this intramural sports program occurs.

Once given permission, distribution of the survey took place. The researcher set up a table near where the various intramural games took place during several game nights, with surveys available. All intramural participants were invited to participate in

the study. Only participants who had just finished playing their game were asked to participate to ensure that the PANAS accurately measured feelings directly occurring as a result of one's participation in their program. An unlimited amount of time was given for the participants to complete the survey to ensure that they had all the time they needed to answer with complete, honest and well thought out responses. Surveys were collected over the course of several weeks. Once it was determined that enough data was collected for analysis, data collection ended. For the purpose of this research, data collection ended shortly after 300 surveys were collected, as is recommended by Tabachnick and Fidell (2007) for research involving a factor analysis.

Data analysis

All survey responses were coded and inputted into the statistical analysis program SPSS. All data collected were screened in order to determine accuracy and appropriateness for use in the analysis stage. The first method of screening included visually checking the data to ensure that the numbers attained match their assigned coding value. The second method included performing a measure check by running frequencies that presented a range of values for each variable. Series means were computed and used to replace any randomly distributed data that were missing. In addition, the assumptions of factor analysis, regression analysis, cluster analysis, and MANCOVA were addressed. These analyses will be explored in depth in chapter four but included analyses such as confirming a normal distribution, looking for signs of multicollinearity, and searching for univariate and multivariate outliers that needed to be eliminated or fixed.

In addition to the motivational climate and affective outcomes of participants, demographic data and data regarding orientation towards sport participation were collected as covariates. Frequencies and percentages are calculated and reported for these demographic data. In addition, measures of central tendency and distribution were calculated and reported for the data concerning orientation towards sports, peer motivational climate and affective outcomes in order to get a good idea of trends and patterns in the information collected.

Factor analyses were conducted on the TEOSQ, PeerMCYSQ and the PANAS in order to determine their internal consistency. Specifically, items were tested for their factor loadings which helped establish whether these items were reliable and valid measures of their constructs and whether they should be eliminated to increase internal consistency. Alpha coefficients were also reported to find out whether the three questionnaires used were reliable measures of the constructs that they are intended to measure with the university student sample in this study. This test also helped determine if the elimination of items resulted in more reliable measures of these constructs.

With respect to answering the research questions of this study, the data analysis techniques vary depending on each research question. The research questions have been restated below followed by a brief description of the data analysis techniques that were used to address the question.

1) *What is the relationship between the two dimensions of peer motivational climate, task-involved climates and ego-involved climates, and the two aspects of affective outcomes, positive affect and negative affect?*

Two hierarchical regression analyses were carried out in order to answer this research question. The first regression analyzed the two independent variables of task- and ego-involved peer motivational climate on the dependent variable of positive affect. The second regression analyzed the two independent variables of task- and ego-involved peer motivational climate on the dependent variable of negative affect. This analysis also included the covariates of gender, age, ethnicity, year of study, whether it is a men's, women's or co-ed program, whether participants won, lost, or tied, and task- and ego-orientation towards sports participation in order to determine how they affect shared variability between the predictor and outcome variables.

2) *What is the relationship between the five domains of peer motivational climate (Improvement, Relatedness/Support, Effort, Intra-team Competition and Intra-team Conflict) and the two aspects of affective outcomes, positive affect and negative affect?*

Two hierarchical regression analyses were carried out in order to answer this research question. The first regression analyzed the five independent variables of Improvement, Relatedness/Support, Effort, Intra-team Competition, and Intra-team Conflict on the dependent variable of positive affect. The second regression analyzed the five independent variables of Improvement, Relatedness/Support, Effort, Intra-team Competition, and Intra-team Conflict on the dependent variable of negative affect. This analysis also included the covariates of gender, age, ethnicity, year of study, whether it is a men's, women's or co-ed program, whether participants won, lost, or tied, and task- and ego-orientation towards sports participation in order to

determine how they affect shared variability between the predictor and outcome variables.

3) *Are there significant differences in positive and negative affective outcomes of intramural sports participation between high, medium and low levels of task-involved peer motivational climates?*

A MANCOVA was carried out in order to answer this research question. However it should be noted that a cluster analysis was conducted in order to separate participants' numerical responses into groups of high, medium and low levels of task-involved peer motivational climate. This created a discrete independent variable with three groups appropriate for a test of significant difference. The MANCOVA determined if there are significant differences between high, medium and low levels of task-involved peer motivational climate on the dependent variables of positive and negative affect. This test also accounted for the covariates of gender, age, ethnicity, year of study, whether it is a men's, women's or co-ed program, whether participants won, lost, or tied, and task- and ego-orientation towards sports participation.

4) *Are there significant differences in positive and negative affective outcomes of intramural sports participation between high, medium and low levels of ego-involved peer motivational climates?*

The same MANCOVA from question three was used in order to answer this research question. A cluster analysis was conducted with the purpose of separating participants' numerical responses into groups of high, medium and low levels of ego-involved peer motivational climate. This created a discrete independent variable with three groups appropriate for a test of significant difference. The MANCOVA determined

if there are significant differences between high, medium and low levels of ego-involved peer motivational climate on the dependent variables of positive and negative affect. This test also accounted for the covariates of gender, age, ethnicity, year of study, whether it is a men's, women's or co-ed program, whether participants won, lost, or tied, and task- and ego-orientation towards sports participation.

Results

Data Analysis

This chapter will go over the results obtained through the data analysis conducted for this research study. Several procedures were carried out using the data set obtained through the surveys completed for this study. The first of these procedures were factor analyses which helped determine the internal consistency of the subscales composing the TEOSQ, the PeerMCYSQ, and the PANAS. It was important to determine whether these tools accurately measured the variables that they were set out to measure when used with a university aged sample. Specifically, it determined how well the survey items loaded onto factors which represented the subscales that these tools were meant to measure. Additionally, Cronbach's Alpha's were reported with the same purpose to further show the reliability of these subscales.

The second procedure of this study was a set of hierarchical regression analyses used to determine the relationship between the two dimensions of peer motivational climate, task-and ego-involved peer motivational climates, and the two aspects of affective outcomes, positive affect and negative affect. This included examining the relationship between the lower order categories of task-involved climates (Improvement, Relatedness/Support, and Effort) and ego-involved climates (Intra-team Competition and Intra-team Conflict) on these affective outcomes of intramural sport participation. This procedure also took possible covariates into account in order to control for their influence on the results. These covariates included demographic factors and individuals' orientations towards sports participation, the latter of which was measured using the TEOSQ.

The third procedure conducted on this data was a cluster analysis which was used to transform the continuous independent variables of task- and ego-involved peer climate into discrete variables separated by three categories of high, medium and low levels of both. This would prepare the variable for the last procedure of this study's data analysis. The final procedure was a MANCOVA which was used to determine whether there were significant differences in positive and negative affective outcomes of intramural sports participation between high, medium and low levels of task- and ego-involved peer motivational climates. This analysis also took into account the possible covariates of demographic factors and individuals orientations towards sports participation in order to control for their influence on the results. However, before the results of these four procedures are explained in detail the data screening procedures and descriptive statistics will be examined first.

Data Screening

A total of 338 surveys were collected. Initially 23 of these surveys were removed due to incompleteness or clear dishonestly in responses (i.e. only fives were circled on the response list so that the surveys were completed as quickly as possible). Cases that had missing data greater than 10% (over 5 unanswered questions) were removed and those with less were deemed acceptable leaving the number of cases at 315. The data inputted into SPSS were also reviewed for accuracy. Approximately 10% of the original surveys were randomly reviewed to ensure data input had been correctly conducted. The data was also run through frequencies and descriptive statistics in SPSS in order to search for incorrectly inputted data acting as obvious outliers. In the event that errors were

detected (ie. two cases displayed the unlikely ages of two and four years when the youngest age expected to answer the survey was 17 the proper corrections were made.

Visual inspection of the distribution of the additional missing data showed that the missing data within the sample were randomly distributed. As this was the case, missing values were replaced using series mean values gained from the entire population, using the statistical analysis program, SPSS. Therefore, the variables used for the exploratory factor analysis, hierarchical regression analysis, cluster analysis, and MANCOVA were those remedied by imputing replacement means for each missing data value. The descriptive statistics reported below however are reported, without series means (the number of missing cases for each is indicated). It should be noted however that nominal and ordinal level data were collected in this study for demographics and some of these contained missing values as well. Series means were not imputed for these variables because the number simply represented a category as opposed to an actual numerical value and a series mean would not be very representative. These nominal and ordinal level variables needed to be controlled for, and therefore included, in the hierarchical regression analysis and MANCOVA. Since missing data is problematic for a regression and MANCOVA, additional cases had to be eliminated from the actual regression analysis in addition to the removal of multivariate outliers. The results of these analyses are presented with a reduced sample size of 301. Note that with regards to the descriptive statistics and factor analyses (the ladder not requiring the demographic data) the results are presented with a sample size of 315.

Background Demographics/ Intervening Variables

Of the 338 surveys distributed, there were 315 participants who completed a usable survey from the sample of post-secondary intramural sport participants. Among the 315 usable surveys, 59% (n = 186) were males and 41% (n = 129) were female. The average age of the participants was 20 years (M = 20.28, SD = 2.16) with 1.3% (n = 4) of the cases missing. While 19.4% (n = 61) of the students reported being in their first year of study, 26% (n = 82) indicated being in their second year of study, 22.5% (n = 71) were in their third, 16.5% (n = 52) were in their fourth, 8.3% (n = 26) of students reported being in their fifth year or higher while 7.3% (n = 23) of students reported that they were graduate students (the year of which was not asked). The greatest amount of respondents were of Caucasian ethnicity at 83.8% (n = 264) while 2.5% (n = 8) were African Canadian, 4.1% (n = 13) were Asian Canadian, 1% (n = 3) were Hispanic or Latino, and 8.6 (n = 27) indicated they were neither of the ethnicities indicated on the survey script. Furthermore, 81% (n = 271) of the participants responding to this survey were participating in a coed intramural program consisting of both males and females on a team (most of the programs were offered as coed) while 8.6% (n = 27) were in a females only program and 5.4% (n = 17) were in a males only program. Sixty percent (n = 189) of participants reported that they had won the game that they had just played before answering the questionnaire while 35.6% (n = 112) reported that they had lost and 2.9% (n = 9) reported that their game ended in a tie (respondents could only complete the questionnaire after having just finished playing their sport). In this question, 1.6% (n = 5) of the cases were missing (Refer to table 4for results). Participants were also asked which division of intramural sports they participated in. This could have been either

Competition A (Comp A) which is the most competitive and skilled level, Competition B (Comp B) consisting of less skilled and less competitive participants, and Recreational consisting of individuals only participating for fun. However, during data collection, it was acknowledged that many participants didn't seem to be sure what division they were in. Additionally, upon examination of the dataset in SPSS, it was noticed this question was left blank by a large number of students. As a result of these observations it was decided that intramural division be left out of this study as a variable.

Table 4

Background Demographics

Characteristics	N	%
Gender		
Males	186	59
Females	129	41
Age (years)		
17	6	1.9
18	46	14.6
19	79	25.1
20	62	19.7
21	47	14.9
22	33	10.5
23	24	7.6
24	7	2.2

Table 4 (continued)

Background Demographics

Characteristics	$\underline{N}$	%
25-35	7	2.2
Missing	4	1.3
Year of Study		
First	61	19.4
Second	82	26
Third	71	22.5
Fourth	52	16.5
Fifth	26	8.3
Graduate	23	7.3
Ethnicity		
African Canadian	8	2.5
Asian Canadian	13	4.1
Hispanic/Latino	3	1
Caucasian	264	83.8
Other	27	8.6
Program Gender Composition		
Men	17	5.4
Women	27	8.6
Co-ed	271	86

Table 4 (continued)

Background Demographics

Characteristics	$\underline{N}$	%
Win/Loss		
Won	189	60
Lost	112	35.6
Tie	9	2.9
Missing	5	1.6

Individual Sport Orientations

As already indicated, the TEOSQ was used on the survey as a way to measure individuals' sport orientations. It was thought that, in addition to peer motivational climate, individuals' own attitudes towards sport participation could influence their affective states as well, therefore, as an intervening variable it was felt that it needed to be controlled for in the analysis. The TEOSQ is comprised of 13 items assessing each participant's orientation towards sports participation, seven for task-orientation and six for ego-orientation. All items were measured on a 5-point Likert scale ranging from 1 = 'Strongly Disagree' to 5 = 'Strongly Agree'. Refer to tables 2 and 3 for descriptive statistics of the 13 TEOSQ items.

Table 5

Mean Scores for Task Orientation in Sport Questions

Task Orientation Questions	M	SD	Skewness	Kurtosis
I learn a new skill and it makes me want to practice more.	3.91	0.81	-0.91	1.27
I learn something that is fun to do.	4.14	0.78	-0.94	1.42
I learn a new skill by trying hard.	4.08	0.84	-0.92	1.02
I work really hard.	4.12	0.84	-1.02	1.44
Something I learn makes me want to go and practice more.	3.82	0.89	-0.70	0.42
A skill I learn really feels right.	3.84	0.84	-0.51	0.30
I do my very best.	4.28	0.77	-0.95	0.83

Table 6

Mean Scores for Ego Orientation in Sport Questions

Ego Orientation Questions	M	SD	Skewness	Kurtosis
I'm the only one who can do the play or skill.	2.30	1.15	0.78	-0.10
I can do better than my friends.	2.99	1.04	-0.09	-0.60
The others can't do as well as me.	2.65	1.06	0.27	-0.52
Others mess up and I don't.	2.12	1.00	0.80	0.18
I score the most points/goals/hits, etc	3.07	1.11	-0.12	-0.67

Table 6 (continued)

Mean Scores for Ego Orientation in Sport Questions

Ego Orientation Questions	M	SD	Skewness	Kurtosis
I am the best	2.71	1.27	0.30	-0.88

Though the TEOSQ is only being used to measure an intervening variable it was felt that the data it provides needed to be reliable and valid. An exploratory factor analysis using a principle component analysis (PCA) with a Varimax rotation was conducted to search for structure among the set of variables from this sample. A PCA correlates each item of a survey with a factor or construct reducing the numerous variables into a more manageable dataset with fewer, higher order variables (Field, 2005). The PCA is also useful in identifying whether the items in an already existing survey measure the variables that they were set out to measure with the sample one has. It is typically a good sign that a questionnaire is a reliable & valid measure of one's variables when the items load on to factors in a way that is identical to the dimensions that the items in these scales were set out to measure in the first place, this being indicated in previous research utilizing these questionnaires. If any of the factor loadings do not agree with previous research it may be indicative that the scale measures variables better, for the purposes of this study, when items are dropped from the analysis.

For the TEOSQ orthogonal, Varimax rotations were utilized. It is suggested that orthogonal rotations are used when the factors it measures do not correlate with each other and are mutually independent (Field, 2005). It is easy to determine whether factors correlate or whether they are mutually exclusive by referring to the correlation matrix of

factors produced by the statistics program SPSS during the factor analysis with an oblique rotation. Tabachnick and Fidell (2007) state that "if correlations exceed .32, then there is 10% (or more) overlap in variance among factors, enough variance to warrant oblique rotation" (p. 646). The correlation matrix produced for the factor analysis of the TEOSQ items did not show any correlations between the factors that exceeded .32 so it was determined that an orthogonal rotation best represented the factor loadings for the TEOSQ.

To ensure the accuracy of the PCA, the data must first be tested for singularity problems and multicollinearity. For this dataset the Kaiser -Meyer-Olkin measure of sampling adequacy was at a good value (KMO = .815) and it could be concluded that the patterns of correlations are compact, therefore factor analysis would result in distinct and reliable factors. Bartlett's test of sphericity was also conducted and the Chi-Square value was significant and greater than zero (χ = 1195.303, p = 0.000). Further analysis displayed the determinant of the R-matrix was greater than 0.00001 (det. – 0.021) and confirmed that there is no presence of multicollinearity or singularity problems.

This PCA limited the items to load onto two factors which would represent the task-orientation and ego-orientation variables that the TEOSQ measures. In this analysis all of the items loaded onto the two factors accordingly, that is, they agree with previous research on how items are intended to be grouped together as subscales to measure the latent variables that the questionnaire is set out to measure. These items loaded at high correlation values (factor loading > 0.5). To put it simply, all items originally intended to measure task-orientation loaded onto factor one (task-orientation) while all the items intended to measure ego-orientation loaded onto factor two (ego-orientation). As a result

of this analysis it was determined that all 13 items in the TEOSQ measured what they were supposed to measure with the sample in this study and could represent the task- and ego-orientation variables undergoing analysis as is. The results of the PCA for the TEOSQ are shown in table 7.

Table 7

Summary of items and factor loadings for two-factor solutions (N = 315)

Items	Factor Loadings	
	1	2
I learn a new skill by trying hard.	.771	
Something I learn makes me want to go and practice more	.739	
I work really hard.	.727	
I do my very best.	.651	
A skill I learn really feels right.	.623	
I learn a new skill and it makes me want to practice more.	.614	
I learn something that is fun to do.	.570	
The others can't do as well as me		.780
I am the best		.757
I can do better than my friends.		.727
I score the most points/goals/hits, etc		.725
Others mess up and I don't.		.706
I'm the only one who can do the play or skill.		.547

Note: Factor 1 – Task Orientation, Factor 2 – Ego Orientation

To assess the reliability of each construct or subscale, Cronbach's alpha was calculated. Each subscale should have an alpha level of 0.7 or greater to meet the criteria for acceptability (Tabachnick & Fidell, 2007). Based on this criteria, task-orientation (α = 0.8) and ego-orientation (α = 0.8) had very high and acceptable levels meaning that the TEOSQ is an internally consistent measure of sport orientation. Although ego-orientation seems to heighten in reliability if the item '*I'm the only one who can do or play the skill'* was taken out (α = 0.805), the change is not drastic and question one was kept due to its sufficient factor loading in the PCA.

Once the two constructs of the TEOSQ were identified through the PCA, two scores for each participant's task- (M = 4.03, SD = 0.56) and ego-orientation (M = 2.70, SD = 0.54) towards sports were calculated from the original TEOSQ items. Refer to table 8 for the descriptive statistics for these variables.

Table 8

Mean Scores for Task and Ego Orientation in Sport

Constructs	M	SD	Skewness	Kurtosis
Task Orientation	4.03	0.56	-0.51	0.93
Ego Orientation	2.64	0.78	0.12	-0.20

Peer Motivational Climate

Peer motivational climate acts as the independent variable in this study and is measured using the PeerMCYSQ. This questionnaire is comprised of 21 items assessing each participant's perceptions of the motivational climate that they experience on their respective intramural sports teams. Of the 12 items measuring task-involved peer

motivational climates, four of these items assessed the Improvement dimension, three of

the items assessed the Relatedness/Support dimension, and five of the items pertained to

the Effort dimension. In addition, of the nine items measuring ego-involved peer

motivational climates, five of these items assess the Intra-team Competition dimension

while four of these items assess the Intra-team Conflict dimension. All items were

measured on a 7-point Likert scale ranging from 1 = 'Strongly Disagree' to 7 = 'Strongly

Agree'. Refer to tables 6 and 7 for descriptive statistics of the 21 PeerMCYSQ items.

Table 9

Mean Scores for Peer Motivational Climate in Intramural Sports

Task Involvement Questions	M	SD	Skewness	Kurtosis
Improvement				
Help each other improve.	5.54	1.13	-1.10	1.45
Offer to help their teammates develop new skills.	5.34	1.17	-0.68	0.55
Work together to improve the skills they don't do well.	5.25	1.36	-0.75	0.23
Teach their teammates new things.	4.97	1.23	-0.55	0.01
Relatedness/Support				
Make their teammates feel valued.	5.61	1.13	-0.91	0.85
Make their teammates feel accepted.	5.73	1.22	-1.16	1.46
Care about everyone's opinion.	5.20	1.37	-0.56	-0.22
Effort				
Encourage their teammates to try their hardest	5.62	1.10	-0.85	1.02

Table 9 (continued)

Mean Scores for Peer Motivational Climate in Intramural Sports

Task Involvement Questions	M	SD	Skewness	Kurtosis
Praise their teammates who try hard	5.78	1.16	-1.28	2.06
Are pleased when their teammates try hard	5.80	1.17	-1.35	2.32
Set an example on giving forth maximum effort	5.48	1.25	-0.76	0.21
Encourage their teammates to keep trying after they make a mistake	5.77	1.19	-1.34	2.59

Table 10

Mean Scores for Peer Motivational Climate in Intramural Sports

Ego Involvement Questions	M	SD	Skewness	Kurtosis
Intra-Team Competition/Ability				
Encourage each other to outplay their teammates.	4.52	1.77	-0.38	-0.96
Care more about the opinion of the most able teammates.	4.18	1.66	-0.16	-0.90
Try to do better than their teammates.	3.70	1.58	-0.05	-0.79
Look pleased when they do better than their teammates.	3.94	1.62	-0.02	-0.77
Want to be with the most able teammates.	4.72	1.60	-0.59	-0.28

Table 10 (continued)

Mean Scores for Peer Motivational Climate in Intramural Sports

Ego Involvement Questions	M	SD	Skewness	Kurtosis
Intra-Team Conflict				
Make negative comments that put their teammates down.	2.50	1.70	0.96	-0.24
Criticize their teammates when they make mistakes.	2.69	1.59	0.80	-0.27
Complain when the team doesn't win.	2.99	1.71	0.61	-0.61
Laugh at their teammates when they make mistakes.	3.71	2.02	0.14	-1.28

The PeerMCYSQ was used to measure the independent variable of peer

motivational climate. Specifically it measures two aspects of peer motivational climate,

task-involved and ego-involved peer motivational climates. However these two aspects of

peer climates both have lower order dimensions measured in this questionnaire including

Improvement, Effort, and Relatedness/Support for task-involved climates and Intra-team

Competition and Intra-team Conflict for ego-involved climates. Both of these two higher

order dimensions and five lower order dimensions were analyzed with the dependent

variables of positive and negative affect through the use of multiple regression analyses.

With this in mind it was felt that the data that the PeerMCYSQ provides for these

variables needed to be reliable and valid in order to confirm that this instrument

effectively measured these concepts. This was especially important because the

PeerMCYSQ is typically used on a youth sample and its suitability with a university

student aged sample has yet to be determined. Therefore, first with regards to the five lower order dimensions of peer motivational climate, an exploratory factor analysis using a principle component analysis (PCA) was conducted. Furthermore, an orthogonal Varimax rotation was used to search for structure among the set of variables from this sample because these variables are mutually independent of each other. The correlation matrix between these factors did not yield a value above .32 thus indicating that an orthogonal rotation best represented the factor loadings for the four dimensions of the PeerMCYSQ. The PCA was useful in identifying whether the items in the PeerMCYSQ went towards measuring the dimensions of Improvement, Effort, Relatedness/Support, Intra-team Competition, and Intra-team Conflict. If the factor loadings do not agree with the questionnaire's intended subscales as indicated in previous research it may be indicative that the scale measures variables better, for the purposes of this study, when items are dropped from the analysis.

Two PCA's were conducted because the first analysis presented less than favorable results while the second PCA conducted the analysis again with several items excluded. Again, to ensure the accuracy of the PCA, the data must be tested for singularity and multicollinearity. The first Kaiser -Meyer-Olkin measure of sampling adequacy was at a good value (KMO = .854) and it could be concluded that the patterns of correlations are compact, therefore a factor analysis would result in distinct and reliable factors. The Kaiser -Meyer-Olkin measure of sampling adequacy for the second PCA, conducted after certain items were excluded, was also at a good value (KMO = .824) and it could again be concluded that the patterns of correlations were compact. The first Bartlett's test of sphericity was also conducted and the Chi-Square value was

significant and greater than zero ($\chi = 2171.763$, $p = 0.000$). The second Bartlett's test of sphericity yielded a lower Chi-Square value but still demonstrated that an appropriate factor analysis could be conducted ($\chi = 1634.155$, $p = 0.000$). Further analysis displayed the determinant of the R-matrix was greater than 0.00001 for both the first and second PCA and confirmed that there is no presence of multicollinearity or singularity.

The initial PCA limited the items to load onto five factors which would represent the Improvement, Effort, Relatedness/Support, Intra-team Competition, and Intra-team Conflict dimensions that the PeerMCYSQ measures. In this analysis most of the items loaded onto the five factors accordingly (factor loading > 0.5), that is, they agree with previous research on how items are intended to be grouped together as subscales to measure the latent variables that the questionnaire is set out to measure. However there were several discrepancies observed including:

- *Make their teammates feel accepted* from Relatedness/Support – loaded onto Effort;

- *Set an example on giving forth maximum effort* from Effort did not meet the ≥ 0.5 factor loading criteria;

- *Make their teammates feel valued* from Relatedness/Support loaded onto Improvement; and

- *Try to do better than their teammates* from Intra-team Competition did not meet the ≥ 0.5 factor loading criteria.

What was discovered from this analysis was that the Relatedness/Support dimension was not very reliable in this study as two of the items from this dimension loaded with items from other factors leaving the Relatedness/Support factor with only one item. In addition to this, alpha coefficients were produced for these dimensions; Improvement ($\alpha = 0.77$)

Effort ($\alpha = 0.75$), Relatedness/Support ($\alpha = 0.64$), Intra-team Competition ($\alpha = 0.69$), and

Intra-team Conflict ($\alpha = 0.73$). Relatedness/Support produced the weakest alpha

coefficient as it did not even get near the > 0.7 criteria. With this in mind, a second PCA

was conducted with the three Relatedness/Support items being excluded from the analysis

making this a four factor PCA. Here all the items loaded onto their factors accordingly

with the exception of '*Try to do better than their teammates*' which still did not meet the

> 0.5 criteria. As a result of this analysis it was decided that this item be eliminated and

not included in the regression analysis leaving the Intra-team Competition dimension to

be represented by the remaining four items that make up the factor. Eliminating this item,

however, reduced the alpha coefficient for this dimension significantly ($\alpha = 0.64$).

Though it lowers the alpha coefficient for this factor, this item was still not included in

the construction of the Intra-team Competition variable since it does not meet the > 0.5

factor criteria set out. Based on the alpha coefficients produced for Intra-team

Competition both before and after '*Try to do better than their teammates*' was eliminated,

it clear that this variable should be approached with caution. The results of the second

factor analysis are included in table 11.

Table 11

Summary of items and factor loadings for four-factor solutions (N = 315)

Items	Factor Loadings			
	1	2	3	4
Offer to help their teammates develop new skills.	.762			
Help each other improve.	.716			
Teach their teammates new things.	.678			
Work together to improve the skills they don't do well.	.672			
Encourage their teammates to keep trying after they make a mistake.		.734		
Are pleased when their teammates try hard.		.645		
Encourage their teammates to try their hardest.		.624		
Praise their teammates who try hard.		.567		
Set an example on giving forth maximum effort.		.512		
Complain when the team doesn't win.			.774	
Criticize their teammates when they make mistakes.			.728	
Make negative comments that put their teammates.			.706	
Laugh at their teammates when they make mistakes.			.636	
Try to do better than their teammates.				
Care more about the opinion of the most able teammates.				.729

Table 11 (continued)

Summary of items and factor loadings for f0ur-factor solutions (N = 315)

Items	Factor Loadings			
	1	2	3	4
Want to be with the most able teammates.				.668
Encourage each other to outplay their teammates.				.638
Look pleased when they do better than their teammates.				.599

Note: Due to inefficient factor loadings the Relatedness/Support items have been removed from this factor analysis and will not be used as an independent variable in this study.

Factor 1 – Improvement, Factor 2 – Effort, Factor 3 – Intra-Team Conflict, Factor 4 – Intra-Team Competition

The five lower order dimensions of the PeerMCYSQ were reduced to four lower order dimensions due to insufficient factor loadings from the Relatedness/Support items. This dimension will, therefore, not undergo a regression analysis as the items that measured it were deemed unreliable and invalid. It should be noted though that these three Relatedness/Support items are still included in the two higher order dimensions of the PeerMCYSQ, task- and ego-involved peer motivational climates, because they loaded sufficiently onto both of those factors. This will be examined in the proceeding section. The four lower order dimensions that will undergo multiple regression analysis are Improvement (M = 5.28, SD = 0.94, α = 0.77), Effort (M = 5.69, SD = 0.83, α = 0.75), Intra-team Competition (M = 5.51, SD = 0.95, α = 0.64), and Intra-team Conflict (M = 4.34, SD = 1.15, α = 0.73). The descriptive statistics for these variables are shown in table 12.

Table 12

Mean Scores for Peer Motivational Climate in Intramural Sports

Constructs	M	SD	Skewness	Kurtosis
Improvement	5.28	0.94	-0.54	0.43
Effort	5.69	0.83	-0.44	-0.10
Intra-team Competition	4.34	1.15	-0.31	0.00
Intra-team Conflict	2.97	1.31	0.47	-0.37

The PeerMCYSQ is also being used to measure the two higher order independent

variables of task-involved and ego-involved peer motivational climate. The data provided

by these variables need to be reliable and valid in order to confirm that this instrument

effectively measures these constructs. An exploratory factor analysis using a principle

component analysis (PCA) with an orthogonal Varimax rotation was conducted to search

for structure among the set of variables from this sample because these variables are

mutually independent of each other. The correlation matrix between these factors did not

yield a value above .32, again, indicating that an orthogonal rotation best represented the

factor loadings for the two higher order dimensions of the PeerMCYSQ. The PCA was

useful in identifying whether the items in the PeerMCYSQ went towards measuring task-

and ego-involved peer motivational climates. If the factor loadings do not agree with

previous research it may be indicative that the PeerMCYSQ measures variables better, for

the purposes of this study, when items are dropped from the analysis.

Again, to ensure the accuracy of the PCA, the data must be tested for singularity

and multicollinearity. For this dataset, the Kaiser -Meyer-Olkin measure of sampling

adequacy was at a good value (KMO = .854) and it could be concluded that the patterns

of correlations are compact, therefore factor analysis would result in distinct and reliable

factors. Bartlett's test of sphericity was also conducted and the Chi-Square value was

significant and greater than zero ($\chi = 2171.763$, $p = 0.000$). Further analysis indicated that

the determinant of the R-matrix was greater than 0.00001 indicating that there is no

presence of multicollinearity or singularity.

       This PCA limited the items to load onto two factors which would represent the

task-involvement and ego-involvement variables that the PeerMCYSQ measures. In this

analysis, all of the items loaded onto the two factors accordingly (factor loading > 0.5),

that is, they agree with previous research on how items are intended to be grouped

together as subscales to measure the variables that the questionnaire is set out to measure.

All items originally intended to measure task-involved peer climates loaded onto factor

one. This includes the three Relatedness/Support items that, though they were not valid

measures of Relatedness/Support, were valid measures of task-involved climates. Also,

all the items intended to measure ego-involved peer climates loaded onto factor two. This

includes the item *'Try to do better than their teammates'* that loaded above the 0.5

criteria for this factor. As a result of this analysis, it was determined that all 21 items in

the PeerMCYSQ measured what they were supposed to measure with the sample in this

study and could represent the task- and ego-involvement variables undergoing analysis as

is. The results of this PCA are shown in table 13.

Table 13

Summary of items and factor loadings for two-factor solutions (N = 315)

Items	Factor Loadings	
	1	2
Make their teammates feel valued.	.759	
Set an example on giving forth maximum effort.	.702	
Work together to improve the skills they don't do well.	.700	
Make their teammates feel accepted.	.677	
Offer to help their teammates develop new skills.	.653	
Help each other improve.	.652	
Encourage their teammates to try their hardest.	.648	
Encourage their teammates to keep trying after they make a mistake.	.590	
Teach their teammates new things.	.583	
Are pleased when their teammates try hard.	.573	
Praise their teammates who try hard.	.567	
Care about everyone's opinion.	.529	
Try to do better than their teammates.		.679
Make negative comments that put their teammates down.		.679
Criticize their teammates when they make mistakes.		.660
Look pleased when they do better than their teammates.		.645
Complain when the team doesn't win.		.570

Table 13 (continued)

Summary of items and factor loadings for two-factor solutions (N = 315)

Items	Factor Loadings	
	1	2
Want to be with the most able teammates.		.541
Encourage each other to outplay their teammates.		.539
Care more about the opinion of the most able teammates.		.517
Laugh at their teammates when they make mistakes		.500

Note: Relatedness/Support items will still be included in these two higher order factors of the PeerMCYSQ because they do load sufficiently onto these factors.
Factor 1 – Task-Involved Peer Motivational Climate, Factor 2 - Ego-Involved Peer Motivational Climate

To assess the reliability of each construct or subscale, Cronbach's alpha was calculated. Each subscale should have an alpha level of 0.7 or greater to meet the criteria for acceptability. Based on this criteria, task-involvement ($\alpha = 0.87$) and ego-involvement ($\alpha = 0.77$) had high and acceptable levels meaning that the PeerMCYSQ is an internally consistent measure of task- and ego-involved peer motivational climates. This is significant as the PeerMCYSQ has yet to be used in the intramural sport setting, however these scores demonstrate that even in this type of recreational environment this scale is still a reliable measurement of this construct.

Once the two constructs of the PeerMCYSQ were identified through the PCA, two scores for each participant's task- (M = 5.51, SD = 0.77) and ego-involvement (M = 3.66, SD = 1.01) towards sports were calculated from the original PeerMCYSQ items. Refer to table 14 for descriptive statistics for these variables.

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Table 14

Mean Scores for Peer Motivational Climate in Intramural Sports

Constructs	M	SD	Skewness	Kurtosis
Task Involved Peer Motivational Climate	5.51	0.77	-0.54	0.43
Ego Involved Peer Motivational Climate	3.66	1.01	-0.02	-0.05

Positive and Negative Affect Questions

Positive and negative affective states serve as the dependent variable of this study

and have often been measured in research using the PANAS (Crocker, 1997). The

PANAS is comprised of 20 items assessing each participant's affective states. Ten of the

items pertain to positive affective states while the other 10 assess their negative affective

states. All items were measured on a 5-point Likert scale ranging from 1 = 'Strongly

Disagree' to 5 = 'Strongly Agree'. Refer to table 15 and 16 for descriptive statistics of the

20 PANAS items.

Table 15

Mean Scores for Positive Affective Outcomes

Positive Affect Questions	M	SD	Skewness	Kurtosis
Interested	3.77	0.99	-0.66	-0.09
Excited	3.93	1.02	0.89	0.40
Strong	3.69	1.02	-0.49	-0.36
Enthusiastic	3.99	1.04	-0.97	0.32

Table 15 (continued)

Mean Scores for Positive Affective Outcomes

Positive Affect Questions	M	SD	Skewness	Kurtosis
Proud	4.01	1.00	-0.98	0.69
Alert	3.62	1.04	-0.78	0.33
Inspired	3.40	1.12	-0.43	-0.51
Determined	3.82	1.03	-0.95	0.66
Attentive	3.55	1.05	-0.61	-0.04
Active	4.22	0.89	-1.16	1.17

Table 16

Mean Scores for Negative Affective Outcomes

Negative Affect Questions	M	SD	Skewness	Kurtosis
Distressed	1.92	1.09	1.04	0.25
Upset	1.72	0.98	1.28	0.80
Guilty	1.61	0.94	1.63	2.17
Scared	1.57	0.94	1.74	2.47
Hostile	1.72	0.99	1.12	0.46
Irritable	2.03	1.10	0.82	-0.28
Ashamed	1.60	0.95	1.74	2.70
Nervous	1.84	1.01	1.07	0.49

Table 16 (continued)

Mean Scores for Negative Affective Outcomes

Negative Affect Questions	M	SD	Skewness	Kurtosis
Jittery	2.25	1.30	0.65	-0.83
Afraid	1.50	1.00	2.14	3.85

The PANAS is being used to measure the two dependent variables of positive and negative affective states. An exploratory factor analysis using a PCA with an orthogonal Varimax rotation was conducted to search for structure among the set of variables from this sample because these variables are also mutually independent of each other. The correlation matrix between these factors did not yield a value above .32, indicating that an orthogonal rotation best represented the factor loadings for these two dependent variables. The PCA was useful in identifying whether the items in the PANAS went towards measuring positive and negative affect. If the factor loadings do not agree with previous research it may be indicative that the scale measures variables better, for the purposes of this study, when items are dropped from the analysis.

One orthogonal factor analysis utilizing a Varimax rotation was conducted for the PANAS. Again, to ensure the accuracy of the PCA, the data must be tested for singularity and multicollinearity. For the first PCA the Kaiser -Meyer-Olkin measure of sampling adequacy was at a good value (KMO = .874) and it could be concluded that the patterns of correlations are compact, therefore factor analysis would result in distinct and reliable factors. The Bartlett's test of sphericity for the PCA was also conducted and the Chi-Square value was significant and greater than zero (χ = 2399.723, p = 0.000). Further

analysis displayed the determinant of the R-matrix was greater than 0.00001 for both analyses and confirmed that there is no presence of multicollinearity or singularity.

In this analysis all of the items loaded onto the two factors accordingly, that is, they agree with previous research on how items are intended to be grouped together as subscales to measure the latent variables that the questionnaire is set out to measure. These items loaded at high correlation values (factor loading > 0.5). To put it simply, all items originally intended to measure positive affect loaded onto factor one (positive affect) while all the items intended to measure negative affect loaded onto factor two (negative affect). As a result of this analysis it was determined that all 20 items in the PANAS measured what they were supposed to measure with the sample in this study and could represent the positive and negative affect variables undergoing analysis as is. The results of the PCA for the PANAS are shown in table 17.

Table 17

Summary of items and factor loadings for two-factor solutions (N = 315)

Items	Factor Loadings	
	1	2
Enthusiastic	.754	
Excited	.751	
Proud	.738	
Inspired	.718	
Active	.710	
Strong	.671	
Determined	.629	

Table 17 (continued)

Summary of items and factor loadings for two-factor solutions (N = 315)

Items	Factor Loadings	
	1	2
Interested	.619	
Attentive	.618	
Alert	.604	
Afraid		.734
Scared		.730
Guilty		.717
Nervous		.700
Ashamed		.693
Hostile		.693
Upset		.674
Irritable		.618
Distressed		.582
Jittery		.509

Note: Factor 1 - Positive Affect/Factor 2 -Negative Affect

To assess the reliability of each construct or subscale, Cronbach's alpha was calculated. Each subscale should have an alpha level of 0.75 or greater to meet the criteria for acceptability. Based on this criteria, Positive Affect ($\alpha = 0.87$) and Negative Affect ($\alpha = 0.86$) had high and acceptable levels meaning that the PANAS is an internally consistent measure of positive and negative affective outcomes of intramural participants.

Once the two constructs of the PANAS were identified through the PCA, two scores for each participant's positive affective state (M = 3.80, SD = 0.69) and negative affective state (M = 1.78, SD = 0.68) were calculated from the original PANAS items. Refer to table 18 for descriptive statistics for these variables.

Table 18

Mean Scores for Task and Ego Orientation in Sport

Constructs	M	SD	Skewness	Kurtosis
Positive Affect	3.80	0.69	-0.56	0.41
Negative Affect	1.78	0.68	1.04	0.71

Hierarchical Regression

Research questions one and two have been addressed in this study utilizing a hierarchical regression analysis, the second procedure of this study's data analysis. Research question one asks: *what is the relationship between the two dimensions of peer motivational climate, task-involved climates and ego-involved climates, and the two aspects of affective outcomes, positive affect and negative affect?* Research question two asks: *what is the relationship between the five domains of peer motivational climate (Improvement, Relatedness/Support, Effort, Intra-team Competition and Intra-team Conflict) and the two aspects of affective outcomes, positive affect and negative affect?* A hierarchical regression analysis helps discover, to what extent, the independent variables of task- and ego-involved peer motivational climate predicts the dependent variables positive and negative affective outcomes in sports participation. This analysis will also take into account the covariates of gender, age, ethnicity, year of study, whether it is a

men's, women's or co-ed program, whether or not participants won, lost, or tied, and task- and ego-orientation towards sports participation to see how they affect the shared variability between the independent and dependent variables of this study.

Assumptions of Regression

Tabachnick and Fidell (2007) list several assumptions to be met for a multiple regression. These include univariate and multivariate outliers, an absence of multicollinearity, normality, linearity, and homoscedastisity of residuals, and independence of errors. These assumptions are addressed below before reporting the results.

Univariate Outliers

Tabachnick and Fidell (2007) state that "univariate outliers are cases with very large standardized scores, z scores, on one or more variables, that are disconnected from the other z scores" (p. 73). They further explain that cases with standardized scores in excess of 3.29 (p < .001) can be considered a potential outlier. One way to detect univariate outliers in SPSS is to generate box plots for the variables undergoing a regression analysis. Box plots were generated for the orientations of sport participation (task- and ego-orientation), peer motivational climate (task and ego-involved), the four domains of peer motivational climate (Improvement, Effort, Intra-team Competition and Intra-team Conflict) and affective outcomes (positive and negative affect). Box plots are useful in showing the distribution of variables and clearly indicating which cases deviate from the distribution so much that they are univariate outliers. Once these cases were pointed out it was decided that their influence on the distribution would be alleviated by changing the score on the variables for the outlying cases. The scores of outlying cases

were changed to the next most extreme score that was within the distribution. "Because measurement of variables is sometimes rather arbitrary anyway, this is often an attractive alternative to reduce the impact of a univariate outlier" (Tabachnick & Fidell, 2007, p. 77). This was done until no outlying cases remained.

Multivariate Outliers

A Mahalinobis distance was used to calculate which cases were multivariate outliers. With respect to the regression between task- and ego involvement and positive and negative affect the highest value to be accepted is 31.26 at $p = 0.001$ with 11 degrees of freedom (variables in the regression). Cases with a Mahalinobis distance of over 31.26 during this regression were considered a multivariate outlier. With regards to the regression between the four domains of peer motivational climate and positive and negative affect the highest value to be accepted is 34.53 at $p = 0.001$ with 13 degrees of freedom (variables in the regression). Cases with a Mahalinobis distance of over 34.53 during this regression were considered a multivariate outlier. Both Mahalinobis distances (11 and 13 degrees of freedom) indicated that five cases were multivariate outliers and these cases were excluded from the hierarchical regression analysis.

Absence of Multicollinearity

Multicollinearity refers to variables which are highly correlated to the point where they are ultimately redundant (Tabachnick & Fidell, 2007). Field (2005) suggests that multicollinearity is present in variables that demonstrate a value higher than $r = .8$. It is important that none of the independent variables undergoing hierarchical regression demonstrate multicollinearity as this doubles the amount of standard errors of regression coefficients. "None of the regression coefficients may be significant because of the large

size of standard errors" (Tabachnick & Fidell, 2007, p. 128). The independent variables in this study do not show any Pearson correlation coefficients (r) over .8 and therefore have not demonstrated multicollinearity.

Normality, linearity, homoscedastisity of residuals

Residuals for the regression analysis between task- and ego- involved peer motivational climates and positive affect showed normality, linearity, and homoscedasticity in its distribution. The same was found for the regression analysis between the four domains of peer motivational climate (Improvement, Effort, Intra-team Competition, and Intra-team Conflict) and positive affect. This makes sense as the distributions for the independent and dependent variables in these regression analyses were, for the most part, evenly distributed and linear making this assumption fulfilled. Residuals for the regression analysis between task- and ego- involved peer motivational climates and negative affect showed linearity but were slightly heteroscedastic and not normally distributed, therefore, not completely fulfilling this assumption. This makes sense because the distribution for negative affect collected from the surveys was positively skewed and could be responsible for a more haphazard distribution of residuals. Taking this into account, the results derived from regressions using negative affect as the dependent variable, though not invalidating the analysis, should be interpreted with caution.

Independence of Errors

Field (2005) explains that for any two observations the residual terms should be uncorrelated or independent thus signifying a lack of autocorrelation. This assumption of regression is often tested using the Durbin-Watson test which looks for serial correlations

between errors, specifically, whether adjacent residuals are correlated. Durbin-Watson tests were conducted for each hierarchical regression analysis. The test statistics can range from zero to four with two meaning that errors are uncorrelated. Values above two indicate a negative correlation while those below two represent a positive correlation. Field (2005) indicates that, as a conservative rule, values below one and above three are cause for concern. However the Durbin-Watson tests conducted for each regression in this study remained within the acceptable range. During the hierarchical regression for task- and ego-involved peer motivational climate and positive affect the Durbin-Watson tests yielded a result of 1.987. Furthermore, during the hierarchical regression analyzing the four domains of peer motivational climate (Improvement, Effort, Intra-team Competition, and Intra-team Conflict) and positive affect the Durbin-Watson test yielded a result of 1.980. Both values derived from these regression analyses using positive affect as the dependent variable were very close to two signifying that the errors in these tests showed very low correlations. During the hierarchical regression for task- and ego-involved peer motivational climate and negative affect the Durbin-Watson test yielded a result of 1.723. Furthermore, during the hierarchical regression between the four domains of peer motivational climate and negative affect the Durbin-Watson test yielded a result of 1.722. Though within range, these scores were not as close to two as the previous scores. The errors in the regression analyses using negative affect as the dependent variable were more positively correlated than those from the analyses using positive affect. This could probably be contributed to the distribution of scores for negative affect being highly skewed which increases the chance of correlated errors. Similar to what was found with linearity, normality, and homoscedasticity of residuals it is clear that, though

not invalidating the analysis, results derived from regressions using negative affect as the dependent variable should be interpreted with caution.

Analysis of Control Variables

All questions in the TEOSQ were based on a five-point Likert scale. The task-orientation variable was composed of seven items while the ego-orientation variable was composed of six items. These variables were used as control variables in the hierarchical regression analysis in order to address the concern that participants may have had pre-ordained orientations towards sports participation that may affect how they perceived their peer created motivational climate. During the hierarchical regression task- and ego-orientations towards sports participation were inputted into the second model in order to see how they affected the model while controlling for the demographic variables.

Orientation toward Sports Participation (Control Variable) – Positive Affect

A hierarchical multiple linear regression analysis was used to predict positive affect from orientation towards sports participation while statistically controlling for the demographic variables of age, program gender composition, ethnicity, year of study, gender, and win/loss. Orientation towards sport orientation strengthens the variability between the independent and dependent variables of this model by an R^2 score of .120. Model 1, which only contains the demographic variables, is not significant. However, when orientation towards sports participation is added, the model (Model 2) becomes significant (R = .363, R^2 = .132, $\Delta R2$ = .108, $F(8, 292)$ = 5.557, $p < .001$). In this model task-orientation (β = .349, t = 6.243, $p < .001$) was a significant predictor of positive affect, demonstrating a positive prediction.

Orientation toward Sports Participation (Control Variable) – Negative Affect

A hierarchical multiple linear regression analysis was used to predict negative affect from orientation towards sports participation while statistically controlling for the demographic variables of age, program gender composition, ethnicity, year of study, gender, and win/loss. Orientation towards sport participation strengthens the variability between the independent and dependent variables of this model by an R^2 score of .025. Model 1, which only contains the demographic variables, is significant but demonstrates rather low variability ($R = .216$, $R^2 = .047$, $\Delta R^2 = .027$, $F(6, 294) = 2.392$, $p = .028$). When orientation towards sports participation is added, the model's (Model 2) variability is increased slightly ($R = .267$, $R^2 = .071$, $\Delta R^2 = .046$, $F(8, 292) = 2.802$, $p = .005$) but is still rather low. In this model ego-orientation ($\beta = .157$, $t = 2.593$, $p = .010$) was a significant predictor of negative affect showing a positive prediction. The demographic variable of win/loss ($\beta = .114$, $t = 1.988$, $p = .048$) emerged as a significant predictor in model 2.

Analysis of Independent Variables

All questions in the PeerMCYSQ were based on a seven-point Likert scale. This scale measured the task-involved and ego-involved peer motivational climate variables including their subsequent dimensions; Improvement and Effort for task-involved climates and Intra-team Competition and Intra-team Conflict for ego involved climates. Again the items measuring the Relatedness/Support dimension were eliminated to due insufficient factor loadings. These variables and dimensions were used as predictors (independent variables) in the hierarchical regression analysis.

The PANAS items were based on a five-point Likert scale which measured the variables of positive and negative affective states of intramural sport participants. Each variable of positive and negative affect is represented by 10 of the 20 items on the PANAS. These variables were used as the outcome (dependent variables) of the hierarchical regression analysis.

A total of four hierarchical regression analyses were conducted with the intention of answering the first two research questions of this study. Each of the first two research questions required two hierarchical regression analyses to be conducted (one using positive affect as a dependent variable while the other used negative affect as the outcome) in order to fully address them. The first research question to be answered is as follows: *What is the relationship between the two dimensions of peer motivational climate, task-involved climates and ego-involved climates, and the two aspects of affective outcomes, positive affect and negative affect?*

Peer Motivational Climate – Positive Affect

A hierarchical multiple linear regression analysis was used to predict positive affect from peer motivational climate while statistically controlling for the demographic variables of age, program gender composition, ethnicity, year of study, gender, and win/loss along with the task- and ego- orientation towards sports variables. With the addition of the independent research variables of task- and ego-involved peer motivational climates, the variability in Model 3 is strengthened again by an R^2 score of .120. Model 3 demonstrates an increase in variability over Model 2 and maintains significance ($R = .502$, $R^2 = .252$, $\Delta R^2 = .226$, $F(10, 290) = 9.768$, $p < .001$). In this model task-involved peer motivational climate ($\beta = .400$, $t = 6.802$, $p < .001$) is a

significant predictor of positive affect demonstrating a positive, moderate prediction, while ego-involved peer motivational climate is not a significant predictor. Task-orientation ($\beta = .169$, $t = 2.898$, $p = .004$) remained a significant predictor of positive affect, again demonstrating a positive prediction with positive affect but with less strength. Results of this regression analysis can be found in table 19.

Peer Motivational Climate – Negative Affect

A hierarchical multiple linear regression analysis was used to predict negative affect from peer motivational climate while statistically controlling for the demographic variables of age, program gender composition, ethnicity, year of study, gender, and win/loss along with the task- and ego- orientation towards sports variables. With the addition of the independent research variables of task- and ego-involved peer motivational climates, the variability in Model 3 is strengthened again by an R^2 score of .091. Model 3 demonstrates an even further increase in variability over model 2 and maintains significance ($R = .403$, $R^2 = .163$, $\Delta R^2 = .134$, $F(10, 290) = 5.631$, $p < .001$). In this model task-involved peer motivational climates ($\beta = -.189$, $t = -3.037$, $p = .003$) is a significant predictor of negative affect demonstrating a negative, weak prediction. Conversely ego-involved peer motivational climate ($\beta = .269$, $t = 4.328$, $p < .001$) was a significant predictor of negative affect demonstrating a positive, moderate prediction. Orientations towards sports (task and ego) were no longer significant predictors of negative affect with the inclusion of the task- and ego-involvement variables into model 3. Win/loss ($\beta = .120$, $t = 2.186$, $p = .030$) was still a significant predictor of negative affect. Results of this regression analysis can be found in table 20.

Table 19

Hierarchical Regression Analysis for Variables Predicting Positive Affect (N =301)

	Model 1			Model 2			Model 3		
Variable	B	SEB	β	B	SEB	β	B	SEB	β
Gender	.048	.080	.036	.022	.079	.016	.000	.074	.000
Age	.061	.043	.163	.061	.040	.165	.041	.038	.110
Year of Study	-.050	.053	-.109	-.045	.050	-.098	-.043	.046	-.094
Ethnicity	-.030	.058	-.030	-.001	.055	-.002	.002	.052	.002
Program Gender Composition	-.056	.077	-.043	.013	.074	.010	.010	.069	.008
Win/Loss	-.056	.072	-.046	-.066	.067	-.055	-.095	.063	-.078
Task-Orientation				.443	.071	.349**	.215	.074	.169*
Ego-Orientation				.021	.050	.024	.046	.051	.053
Task-Involved Peer Climate							.360	.053	.400**
Ego-Involved Peer Climate							.050	.040	.075
R^2		.013			.132**			.252**	
F for change in R^2		.621			20.121			23.230	

*p < .05. . **p < .001

Table 20

Hierarchical Regression Analysis for Variables Predicting Negative Affect (N =301)

Variable	Model 1			Model 2			Model 3		
	B	SEB	β	B	SEB	β	B	SEB	β
Gender	-.134	.076	-.101	-.068	.079	-.052	.003	.076	.002
Age	.033	.041	.092	.030	.040	.083	.045	.039	.124
Year of Study	-.080	.050	-.181	-.092	.050	-.207	-.086	.048	-.194
Ethnicity	-.101	.055	-.106	-.101	.055	-.105	-.061	.053	-.064
Program Gender Composition	-.004	.074	-.003	-.008	.074	-.006	.019	.071	.015
Win/Loss	.125	.068	.106	.135	.068	.114*	.141	.065	.120*
Task-Orientation				-.094	.071	-.076	.028	.076	.023
Ego-Orientation				.131	.051	.157*	.018	.053	.021
Task-Involved Peer Climate							-.165	.054	-.189*
Ego-Involved Peer Climate							.176	.041	.269**
R^2		.047*			.071*			.163**	
F for change in R^2		2.392			3.891			15.812	

*p < .05. . **p < .001

Four Domains - Positive Affect

A hierarchical multiple linear regression analysis was used to predict positive affect from the dimensions of peer motivational climate (Improvement, Effort, Intra-team Competition and Intra-team Conflict). The demographic variables of age, program gender composition, ethnicity, year of study, gender, and win/loss in addition to the task- and ego- orientation towards sports variables were statistically controlled for in this analysis. In this process Model 1 once again consists of only the demographic variables while Model 2, again, includes the task- and ego-orientation variables all of which were to be controlled for in this analysis. With the addition of the four domains of peer motivational climate into Model 3 variability is strengthened by an R^2 score of .126. Model 3 demonstrates an even further increase in variability over Model 2 and maintains significance (R = .508, R^2 = .258, ΔR^2 = .227, $F(12, 288)$ = 8.885, $p < .001$). In this model the dimensions concerning task involvement; Improvement (β = .256, t = 4.034, $p < .001$) and Effort (β = .154, t = 2.237, p = .026) are significant predictors of positive affect demonstrating a positive prediction that is moderate and weak respectively. The dimensions ego-involved peer motivational climate; Intra-team Competition and Intra-team Conflict did not demonstrate a significant prediction with positive affect. Task-orientation (β = .170, t = 2.884, $p < .004$) remained a significant predictor of positive affect in Model 3 but with less strength. Results of this regression are listed in table 21.

Table 21

Hierarchical Regression Analysis for Variables Predicting Positive Affect (N =301)

	Model 1			Model 2			Model 3		
Variable	B	SEB	β	B	SEB	β	B	SEB	β
Gender	.048	.080	.036	.022	.079	.016	.004	.074	.003
Age	.061	.043	.163	.061	.040	.165	.031	.038	.084
Year of Study	-.050	.053	-.109	-.045	.050	-.098	-.025	.047	-.054
Ethnicity	-.030	.058	-.030	-.001	.055	-.002	-.010	.052	-.010
Program Gender Composition	-.056	.077	-.043	.013	.074	.010	-.001	.069	-.001
Win/Loss	-.056	.072	-.046	-.066	.067	-.055	-.093	.063	-.077
Task-Orientation				.443	.071	.349**	.216	.075	.170*
Ego-Orientation				.021	.050	.024	.039	.051	.045
Improvement							.191	.047	.256**
Effort							.128	.057	.154*
Intra-team Competition							.068	.037	.112
Intra-team Conflict							-.019	.032	-.036
R^2		.013			.132**			.258**	
F for change in R^2		.621			20.121			12.219	

*p < .05. ** p < .001

Four Domains - Negative Affect

A hierarchical multiple linear regression analysis was used to predict negative affect from the dimensions of peer motivational climate (Improvement, Effort, Intra-team Competition and Intra-team Conflict). The demographic variables of age, program gender composition, ethnicity, year of study, gender, and win/loss in addition to the task- and ego- orientation towards sports variables were statistically controlled for in this analysis. With the addition of the dimensions of peer motivational climate into Model 3 variability is strengthened by an R^2 score of .100 when controlling for the demographic variables and the sport orientation variables. Model 3, again, demonstrates an even further increase in variability over Model 2 and maintains significance (R = .414, R^2 = .172, ΔR^2 = .137, $F(12, 288) = 4.974$, $p < .001$). In this model, with regards to the dimensions concerning task involvement, Improvement was not a significant predictor of negative affect while Effort ($\beta = -.218$, $t = -2.993$, $p = .003$) was a significant predictor of negative affect demonstrating a negative, moderate prediction. The dimensions of ego-involved peer motivational climate, Intra-team Competition ($\beta = .195$, $t = 3.073$, $p = .002$) and Intra-team Conflict ($\beta = .137$, $t = 2.087$, $p = .038$) showed a significant positive, weak prediction with negative affect. Task- and ego-orientation towards sports were no longer significant predictors of negative affect with the inclusion of the four domains of peer motivational climate into Model 3. Win/loss ($\beta = .130$, $t = 2.365$, $p = .019$) was still a significant predictor of negative affect in Model 3. The results of this regression analysis can be found in table 22.

Table 22

Hierarchical Regression Analysis for Variables Predicting Negative Affect (N =301)

	Model 1			Model 2			Model 3		
Variable	B	SEB	β	B	SEB	β	B	SEB	β
Gender	-.134	.076	-.101	-.068	.079	-.052	-.013	.076	-.010
Age	.033	.041	.092	.030	.040	.083	.041	.039	.113
Year of Study	-.080	.050	-.181	-.092	.050	-.207	-.082	.048	-.184
Ethnicity	-.101	.055	-.106	-.101	.055	-.105	-.063	.053	-.065
Program Gender Composition	-.004	.074	-.003	-.008	.074	-.006	.018	.071	.014
Win/Loss	.125	.068	.106	.135	.068	.114*	.153	.065	.130*
Task-Orientation				-.094	.071	-.076	.033	.077	.027
Ego-Orientation				.131	.051	.157*	.015	.053	.018
Improvement							.005	.049	.006
Effort							-.176	.059	-.218*
Intra-team Competition							.116	.038	.195*
Intra-team Conflict							.069	.033	.137*
R2		.047*			.071*			.172**	
F for change in R2		2.392			3.891			8.726	

*p < .05. ** p < .001

Summary of Findings

As a result of the preliminary factor analysis several changes had been made to the variables being measured. The domain of task-involved peer motivational climate, Relatedness/Support, was excluded from the hierarchical regression since the three items that are intended to measure it did not load sufficiently onto it as a factor. Furthermore, the item '*Try to do better than their teammates*' from the Intra-team Competition domain of ego-involved peer motivational climate was excluded due to cross-loading onto other factors and not meeting the .5 loading requirement for this study.

H1.1: Positive affect will be positively related to task-involvement and negatively related to ego-involvement.

The first hierarchical regression revealed that demographic variables alone do not predict positive affect as Model 1 was not significant and demonstrated low variance. However with the addition of task- and ego-orientation (Model 2) the model became a more effective predictor of positive affect demonstrating 13.2% of the shared variance. The control variable of task-orientation towards sports was a significant and positive predictor of positive affect. However ego-orientation towards sports had no predictive power over the outcome of positive affect. With the addition of peer-motivational climate (Model 3) the model became an even stronger predictor of positive affect demonstrating 25.2% shared variance. Agreeing with the first research hypothesis (H1.1) task-involved peer motivational climate was a significant and positive predictor of positive affect. However, disagreeing with the first research hypothesis, ego-involved peer motivational climate was not a significant predictor of this outcome variable. Task-orientation towards

sports still predicted positive affect in this model though significantly less than in Model 2.

H1.2: Negative affect will be negatively related to task-involvement and positively related to ego-involvement.

With regards to negative affect the second hierarchical regression revealed that Model 1, which only included demographic variables, was a significant but very weak predictor of negative affect demonstrating 4.7% of the variance. Model 2 brought in the task- and ego- orientations towards sports variables marginally increasing the predictability of the model and demonstrating 7.1% shared variance between negative affect. Ego-orientation towards sports positively predicted this outcome variable. The demographic variable of whether or not individuals won, lost or tied demonstrated predictive power over the dependent variable. With the inclusion of peer motivational climate into Model 3 shared variance with negative affect is increased to 16.3%. Agreeing with the second research hypothesis (H1.2) it was confirmed that task-involved peer motivational climate showed a negative relationship with negative affect while ego-involved peer motivational climate was a positive predictor. In this model ego-orientation towards sport participation was no longer a predictor of negative affect while whether or not an individual won, lost, or tied their game still showed predictive power.

H2.1: Positive affect will be positively related to Improvement, Relatedness/Support and Effort and negatively related to Intra-team Competition and Intra-team Conflict.

The third hierarchical regression conducted was similar to the first one with the exception that the four domains of peer motivational climate were brought into Model 3 as opposed to task- and ego-involvement (therefore Models 1 and 2 are the same as

described for the first hierarchical regression). Even with the inclusion of these new

independent variables, predictability of the model still increased over Model 2 to a shared

variance of 25.8%. Both dimensions of task-involved peer motivational climates,

Improvement and Effort, were positive predictors of positive affect agreeing with the

third research hypothesis of this study (H2.1). However not agreeing with this research

hypothesis were the dimensions of ego-involved peer motivational climate, Intra-team

Competition and Intra-team Conflict, which on their own were not significant predictors

of positive affect. The control variable of task-orientation still showed predictive power

in this model, though significantly less than in Model 2.

H2.2: Negative affect will be negatively related to Improvement, Relatedness/Support and

Effort and positively related to Intra-team Competition and Intra-team Conflict.

      The fourth hierarchical regression conducted was similar to the second one with

the exception that the four domains of peer motivational climate were, again, brought into

Model 3 as opposed to task- and ego-involvement (therefore Models 1 and 2 are the same

as described for the second hierarchical regression). Even with the inclusion of these new

independent variables, predictability of the model still increased over Model 2 to a shared

variance of 17.2%. Agreeing with the fourth research hypothesis (H2.2) was that Effort

was negatively related to negative affect while Intra-team Competition and Intra-team

Conflict were positive predictors of negative affect. However not agreeing with this

hypothesis was the variable of Improvement which was not a significant predictor of

negative affect on its own. Though the ego-orientation towards sports participation

variable ceased to be a significant predictor in this model, whether or not an individual

won, lost, or tied was still a significant predictor of negative affect.

Cluster Analysis

Up until this point research questions one and two have been addressed utilizing hierarchical regression analyses. However, research questions three and four require a different approach. Research question three asks: *are there significant differences in positive and negative affective outcomes of intramural sports participation between high, medium and low levels of task-involved peer motivational climates?* Research question four asks: *are there significant differences in positive and negative affective outcomes of intramural sports participation between high, medium and low levels of ego-involved peer motivational climates?* Immediately one will notice that these research questions involve a discrete independent variable of peer motivational climate as opposed to a continuous one that provided the predictor variable in research questions one and two. This is because these research questions are seeking out a significant difference between groups of a discrete variable as opposed to a significant prediction between two continuous variables. A MANCOVA was utilized to address the hypotheses that accompany these research questions. However, peer motivational climate is itself a continuous, interval level variable as it was collected using a 21 item survey asking participants to rate items on a scale of $1 - 7$ making the overall value of this variable numerical in nature.

The purpose of the cluster analysis used in this research was to transform the continuous, interval level task- and ego-involved peer motivational climate variables into discrete, ordinal level variables (high, medium, and low). There are two types of cluster analyses that can be used to categorize variables with numerical values. The first is a hierarchical analysis which is a stepwise clustering procedure involving a combination

(or division) of the objects into clusters (Hair, Black, Babin, Anderson and Tatham, 2006). Specifically an agglomerative clustering method groups two most similar clusters, or the clusters that demonstrate the shortest Euclidean distance from one another and are therefore the most homogenous, together with each subsequent step until one main cluster remains. A divisive clustering procedure works the opposite way and divides clusters that contain the most dissimilar groups, however this procedure has no purpose within this research. The non-hierarchical procedure produces only a single cluster solution for an already specified number of cluster seeds and is thus very quick and simple to utilize (Hair et al., 2006).

Though it would seem that quota of having high, medium and low categories of task- and ego-involvement would insinuate specifying a three cluster solution in a non-hierarchical procedure it was decided that both hierarchical and non-hierarchical procedures would be used in this cluster analysis. The hierarchical procedure was used in order to confirm whether or not the specified three group solution (high, medium, and low) would be the best solution to utilize in a MANCOVA by indicating if these three groups are mutually homogenous. It should be noted that a two cluster solution and a four cluster solution were also proposed. Hair et al. (2006) indicates that groups more effectively represent what they are supposed to when diversity among the groups of observations within a cluster are less diverse. Therefore, researchers using this analysis would seek out the simplest structure possible that still represents homogenous groupings and avoid having groups where two rather dissimilar clusters were joined at a certain stage. The hierarchical cluster procedure would produce an Agglomeration Coefficient and Clustering Schedule on SPSS which shows an agglomeration coefficient (a measure

of homogeneity) for each cluster created throughout the procedure and shows us when clusters start to become too heterogeneous to justify them as a group that should undergo analysis. It should be noted that there is no actual agreed upon quota as to when a cluster solution in a hierarchical cluster analysis is too heterogeneous (Hair et al. 2006). It is then ultimately up to the researcher's judgement as to how homogenous cluster seeds should be and how many separate groups a variable will contain. A non-hierarchical procedure was also used because this method of analysis tends to be more reliable than the hierarchical method. Non-hierarchical cluster analyses are often more reliable than hierarchical ones because they allow for the reassignment of observations between clusters when more homogenous solutions are found (Hair et al). Hair et al. further explain that the hierarchical process may constrain results by not allowing observations to switch clusters once joined. Therefore, though a hierarchical analysis was useful for determining how many cluster solutions should be formed, a non-hierarchical analysis was used to transform the continuous task- and ego-involved peer climate variables into their three group (low, medium and high) discrete form.

Assumptions of Cluster Analysis

Hair et al. (2006) list two assumptions to be met for a cluster analysis. These include representativeness of the sample and multicollinearity. These assumptions are addressed below before reporting the results.

As with most research, this study tried to put much effort into making the sample represent the population. It's hard to say if the results indicated by the sample represent that of all recreational sport participants anywhere but much effort was put into having a representative sample of intramural participants at the university in which the study takes

place. This study wanted to examine all intramural participants so individuals from almost every sport program were sought out. Surveys were handed out to students at many of the sports on many of the nights that those programs took place along with making sure that both co-ed and single gender programs were sought out. Though it is apparent that the number of individuals from each sport is not at all even it should be made clear that sports such as volleyball, outdoor soccer, and flag football, the most participated in programs as reported in the study, are also the most participated in programs at the university. Contrastingly, a program such as water polo, a much underreported program in this study, is also participated in less by students at the university. The only exception here, which may reduce the representativeness of this sample, is that ice hockey players did not complete any surveys. This particular program took place at a location outside of the university and clearance was not given to distribute surveys anywhere off of university grounds. Other rather skewed demographic data also tends to represent the population in that clearly most sports are offered as co-ed and most intramural participants are Caucasian.

Multicollinearity, an issue in other statistical techniques, is actually more of a form of implicit weighting in a cluster analysis (Hair et al., 2006). Researchers are actually encouraged to examine the variables for substantial multicollinearity. Though it was addressed during the hierarchical regression analysis that task- and ego-involved peer motivational climate did not demonstrate multicollinearity ($r \geq .8$) these variables do show a significant Pearson Correlation coefficient ($r = -.175, p < .05$) and therefore show a weak relationship with one another. However Hair et al. suggest that researchers can address this assumption by standardizing their data by either reducing the values in each

set to equal numbers or using one of the distance measures before conducting a cluster analysis. To address this assumption the former suggestion was utilized before the cluster analysis took place as SPSS can standardize numbers in a variable by reducing them to values between 1 and -1 pre-analysis.

Cluster Analysis Results

A hierarchical cluster analysis utilizing Ward's Method was used to find out if the proposed three cluster solution of task- and ego-involvement (high, medium and low levels) would be appropriate to use in the upcoming MANCOVA that will address the third and fourth research questions. Hair et al. (2006) explain that Ward's method is appropriate for researchers expecting somewhat equally sized clusters though it is easily distorted by outliers. Fortunately both univariate and multivariate outliers were already removed from the dataset in order to address the assumptions of the multiple regression analysis and should have no impact on Ward's method of cluster analysis. With that said the cluster analysis was run without cases that were multivariate outliers (n = 310).

The final outputs of the cluster analysis revealed a total of 309 stages of clusters created with heterogeneity, represented by the agglomeration coefficients gradually increasing as cluster groups combine together, especially in the final ten stages as is expected when the remaining clusters combine into an eventual single group. The goal is to select a final cluster solution to represent the discrete peer motivational climate variables, the quota of being the least amount of groups possible that still represent homogenous clusters. When looking at the final ten stages of the hierarchical cluster analysis (stages 299-309) for both task- and ego- involvement one notices the agglomeration coefficient gradually increases up until stage 308 when the increase spikes

more intensely. This is followed by the largest agglomeration coefficient at stage 309 which Hair et al. (2006) indicate is expected at the last stage of a cluster analysis since this stage combines the most distinct groups into a single cluster and is therefore the most heterogeneous cluster in the analysis. Because of this it is typically not a good idea to simply accept a two cluster solution, especially when there are noticeable spikes in the increase of the agglomeration coefficient elsewhere in the clustering schedule. A noticeable spike at any stage in the schedule indicates increased heterogeneity in a cluster solution and hints at accepting the amount of cluster solutions which come before it.

In the case of this study this spike in heterogeneity occurs at stage 308 with an agglomeration coefficient of 5.242 for task involvement and 2.141 for ego involvement, an increase of 52.02% and 50.31% respectively. Because of this it was felt that stage 307, a three cluster solution, provided smallest amount of groupings that were still homogenous enough to affectively represent what they are suppose to measure (high, medium and low task- and ego involved peer motivational climate). Therefore, both task- and ego- involved peer motivational climates will be transformed from a continuous variable into a discrete variable with three distinct groups. The results of the final ten stages of the cluster analysis can be seen in table 23 for the task-involvement variable and table 24 for the ego-involvement variable.

Table 23

Agglomeration Coefficient and Clustering Schedule for Hierarchical Cluster Analysis of Task-Involvement (N = 310)

Stage	Number of Clusters		Agglomeration Coefficient	
	Before Joining	*After Joining*	*Value*	*Percentage Increase*
299	12	11	.186	14.52
300	11	10	.216	13.89
301	10	9	.260	16.92
302	9	8	.381	31.76
303	8	7	.522	27.01
304	7	6	.723	27.80
305	6	5	1.056	31.53
306	5	4	1.769	40.31
307	4	3	2.515*	29.66
308	3	2	5.242	52.02
309	2	1	14.761	64.49

*Highest accepted heterogenic value (final cluster solution chosen)

Table 24

Agglomeration Coefficient and Clustering Schedule for Hierarchical Cluster Analysis of Ego- Involvement (N = 310)

Stage	Number of Clusters		Agglomeration Coefficient	
	Before Joining	*After Joining*	*Value*	*Percentage Increase*
299	12	11	.169	20.71
300	11	10	.208	18.75
301	10	9	.258	19.38
302	9	8	.310	16.77
303	8	7	.444	30.18
304	7	6	.589	24.62
305	6	5	.852	30.87
306	5	4	1.386	38.53
307	4	3	2.141*	35.26
308	3	2	4.309	50.31
309	2	1	10.843	60.26

*Highest accepted heterogenic value (final cluster solution chosen)

Again it should be noted that the non-hierarchical cluster analysis was used to transform the continuous peer motivational climate variables into discrete ones on SPSS. Non-hierarchical cluster analyses are often more reliable than hierarchical ones because they allow for the reassignment of observations between clusters whereas the hierarchical process may constrain results by not allowing observations to switch clusters once joined. Two non-hierarchical cluster analyses were conducted using the three cluster solution specified in the third and fourth research questions and confirmed the best number of

solutions to be used by the hierarchical analysis. The first analysis separated task-involved peer motivational climate into three clusters which would represent high, medium, and low levels of task-involved peer motivational climates. The second analysis did the same thing with ego-involved peer motivational climate. The final cluster centers, which show the means of each cluster created on SPSS, confirmed which levels of task- and ego-involved peer motivational climate were represented by which clusters. With regards to task-involved peer motivational climate, low task-involvement was represented by cluster three ($M = 4.58$), medium task-involvement was represented by cluster one ($M = 5.51$), and high task-involvement was represented by cluster two ($M = 6.28$).The final cluster centers for task-involved peer motivational climate are reported in table 25. With regards to ego-involved peer motivational climate, low ego-involvement was represented by cluster two ($M = 2.39$), medium ego-involvement was represented by cluster three ($M = 3.64$), and high ego-involvement was represented by cluster one ($M = 4.83$).The final cluster centers for ego-involved peer motivational climate are reported in table 26.

Table 25

Final K-Means Cluster Centers for Task-Involved Peer Motivational Climate

	Cluster		
	1 – Medium	2 – High	3 – Low
Task-Involvement	5.51	6.28	4.58

Table 26

Final K-Means Cluster Centers for Ego-Involved Peer Motivational Climate

	Cluster		
	1 – High	2 – Low	3 – Medium
Ego-Involvement	4.83	2.39	3.64

As a result of the non-hierarchical cluster analysis, two new independent variables representing task- and ego-involved peer motivational climate were derived in their new discrete three group forms (high, medium and low). With regards to the task-involvement variable, the 310 cases involved in the cluster analysis were separated into three groups of which 29.0% (n = 90) were classified as reporting low task-involvement, 34.8% (n = 108) were classified as reporting medium task-involvement, and 36.1% (n = 112) were classified as reporting high task-involvement. In addition, with regards to the ego-involvement variable 26.1% (n = 81) were classified as reporting low ego-involvement, 45.2% (n = 140) were classified as reporting medium ego-involvement, and 28.7% (n = 89) were classified as reporting high ego-involvement. These results are reported in tables 24 and 25. The groups formed by non-hierarchical cluster analysis underwent the MANCOVA being used to address research questions three and four.

Table 27

Descriptive Statistics for High, Medium and Low Levels of Task-Involved Peer Motivational Climate

Characteristics	N	%
Low Task-Involvement	90	29.0
Medium Task-Involvement	108	34.8
High Task-Involvement	112	36.1

Table 28

Descriptive Statistics for High, Medium and Low Levels of Ego-Involved Peer Motivational Climate

Characteristics	N	%
Low Ego-Involvement	81	26.1
Medium Ego-Involvement	140	45.2
High Ego-Involvement	89	28.7

MANCOVA

Up until this point, research questions one and two have been addressed utilizing a hierarchical regression analysis. However, research questions three and four require a different approach. Research question three asks: *are there significant differences in positive and negative affective outcomes of intramural sports participation between high, medium and low levels of task-involved peer motivational climates?* Research question four asks: *are there significant differences in positive and negative affective outcomes of*

intramural sports participation between high, medium and low levels of ego-involved

peer motivational climates? These research questions involve a discrete independent

variable of peer motivational climate as opposed to the continuous one that provided the

predictor variable being asked about in research questions one and two. This is because

these research questions are seeking out a significant difference between groups of a

discrete variable as opposed to a significant relationship between two continuous

variables. The cluster analysis carried out in procedure three of data analysis successfully

transformed the continuous peer motivational climate variable into a discrete one

containing the categories; high, medium, and low. A multiple analysis of covariance

(MANCOVA), the fourth procedure of data analysis in this research study, was utilized to

address the hypotheses that accompany the third and fourth research questions indicated

above.

Assumptions of MANCOVA

Tabachnick and Fidell (2007) and Field (2005) indicate several assumptions to be

met for a MANCOVA. These include independence of observations and random

sampling of data, homogeneity of regression slopes, homogeneity of covariance matrices,

and multivariate normality. These assumptions are addressed below before reporting the

results.

Independence of Observations/Random Sampling of Data

An assumption of independence of observation requires that the responses from

each participant are made independently of the responses of other participants. Though

this assumption can typically be met by employing random sampling techniques, this

study did not utilize a random sample for data collection. Instead, surveys were made

available to all intramural participants at the locations where the games took place while participants could chose to complete the survey at their convenience. Though this assumption has not been fulfilled, this does not mean that data collected possesses less significance but does warrant caution due to an increased chance of a type I error (Tabachnick & Fidell, 2007).

Homogeneity of Regression Slopes

To test the assumption of homogeneity of regression slopes we must specify a model which includes the interaction effects between each covariate and independent variable in this analysis (Field, 2005). If any of these interaction effects demonstrate significance then the assumption of homogeneity of regression slopes is broken. However every interaction affect between each covariate and independent variable were not significant ($p > 0.05$). Therefore, equality of regression slopes for all variables entered into the MANCOVA can be assumed.

Homogeneity of Covariance Matrices

To confirm the assumption of homogeneity of covariance matrices, Box's M test of equality of covariance matrices and Levene's test of equality of error variances were conducted. In an analysis of covariance (ANCOVA) it is assumed that the variances in each group are roughly equal and in MANCOVA this must be true for each dependent variable. To test this assumption Levene's test was conducted on the two dependent variables of positive affect and negative affect. Though Levene's test was not significant for positive affect ($F = .712$, $p = .681$), thus fulfilling the assumption of equality of variance for this dependent variable, it was significant for negative affect ($F = 3.727$, $p < .05$) indicating that the variances are not equal. This will not make univariate statistical

testing during the MANCOVA on negative affect invalid but these tests for significant

differences using negative affect as a dependent variable do warrant caution. It should

also be noted that Levene's test does not take into account covariances. Therefore, this

assumption is further examined by testing whether the variance-covariance matrices of

the different groups in the analysis are equal. Box's M test was not significant thus

supporting homogeneity and equality of covariance matrices in the data set (BM =

29.143. $p = .251$).

Multivariate Normality

This assumption addresses the multivariate normality of the continuous dependent

variables. Hair et al. (2006) explain that "a multivariate normal distribution assumes that

the joint effect of two variables is normally distributed" (p. 410). Essentially, it is

important that our dependent variables are normally distributed within each group in this

analysis. However, several authors (Hair et al.; Field, 2005) indicate that there are no

direct statistical tests available to conduct this procedure and that most researchers

address this assumption by testing for univariate normality of each variable. Hair et al.

(2006) warn that "although univariate normality does not guarantee multivariate

normality, if all variables meet this requirement then any departures from multivariate

normality are usually inconsequential" (p. 410). The dependent variable of positive affect

is normally distributed and it will therefore be assumed that it has multivariate normality.

The dependent variable of negative affect, as is known by this point, has violated several

assumptions due to it being positively skewed. Since univariate normality is a necessary

condition for multivariate normality (Field) it will be assumed that negative affect does

not demonstrate multivariate normality thus violating this assumption. Again, tests

utilizing this dependent variable warrant caution in the interpretation of their results.

Analysis

For this study, a MANCOVA was conducted with task- and ego involved peer

motivational climates as the independent and now discrete ordinal level variables

containing the groups of high, medium and low task- and ego involvement. Positive and

negative affective states are, again, the dependent variables but still contain their

continuous values. This analysis also statistically controlled for the covariates of gender,

age, ethnicity, year of study, whether it is a men's, women's or co-ed program, win/loss,

and task- and ego-orientation towards sports participation. One MANCOVA was

conducted with the covariates, independent variables, and dependent variables being

entered simultaneously. The only covariates demonstrating significance were win\loss

(Pillai's trace = 0.023, $F(2, 283) = 3.288$, $p = .039$) and task-orientation (Pillai's trace =

0.047, $F(2, 283) = 6.944$, $p = .001$). Further analysis indicated that there was a significant

difference between the groups of the win/loss covariate, which includes the categories of

win, loss, and tie, on negative affect ($F = 4.305$, $p = .039$) but not on positive affect.

Additionally, there was a significant difference between the continuous covariate of task-

orientation on positive affect ($F = 13.936$, $p < .001$), but not negative affect.

Analysis of High, Medium and Low Task-Involved Peer Motivational Climates

Again, the continuous task- and ego-involved peer motivational climate variables

were turned into discrete categorical variables of high, medium, and low task-involved

and ego-involved peer motivational climate from the cluster analysis that took place

previous to the MANCOVA. This was done to test for significant differences between

these three levels of peer motivational climates and answer the third and fourth research questions. The third research question to be answered is as follows: *are there significant differences in positive and negative affective outcomes of intramural sports participation between high, medium and low levels of task-involved peer motivational climates?*

The overall multivariate test of group differences for task-involved peer motivational climate was significant (Pillai's trace = 0.115, $F(4, 568) = 8.696$, $p < .001$). Further analysis indicated that there was a significant difference between the levels of task-involvement on positive affect ($F = 16.465$, $p < .001$), but not negative affect. These values for the variables in the analysis can be found in table 29. Univariate, post-hoc analysis of this effect revealed significant differences between low vs. medium, low vs. high, and medium vs. high levels of task-involvement on positive affect ($p < .05$).

Descriptive statistics of these data show that those who indicated experiencing the highest levels of task-involvement on their intramural teams also experienced the highest amount of positive affect while those who experienced the lowest levels of task-involvement on their teams reported the lowest amount of positive affect. Those who could be classified as experiencing medium levels of task-involvement in the sample were in the middle of those two values. These values can be seen in table 30. The MANCOVA shows that these differences in the amounts of positive affect reported by those experiencing high, medium, and low levels of task-involvement are statistically significantly and not due to chance alone.

Analysis of High, Medium and Low Ego-Involved Peer Motivational Climates

The MANCOVA also tested for differences between the three groups of ego-involved peer motivational climates (high, medium and low ego-involvement). These

tests went towards answering the fourth research question which asks *are there significant differences in positive and negative affective outcomes of intramural sports participation between high, medium and low levels of ego-involved peer motivational climates?*

The overall multivariate test of group differences for ego-involved peer motivational climate was significant (Pillai's trace = 0.057, $F(4, 568) = 4.151$, $p = .003$). Further analysis indicated that there was a significant difference between the three levels of ego-involvement on negative affect ($F = 8.389$, $p < 0.001$), but not positive affect. These values for the variables in the analysis can be found in table 29. Univariate, post-hoc analysis of this effect revealed significant differences between low vs. medium, low vs. high, and medium vs. high levels of ego-involvement on negative affect ($p < .05$).

Descriptive statistics of these data show that those who indicated experiencing the highest levels of ego-involvement on their intramural teams also experienced the highest amount of negative affect while those who experienced the lowest levels of ego-involvement on their teams reported the lowest amount of negative affect. Those who could be classified as experiencing medium levels of ego-involvement in the sample were, again, in the middle of those two values. These values can be seen in table 31. The MANCOVA indicates that these differences are statistically significant in the amounts of negative affect reported by those experiencing high vs. low, medium vs. low, and high vs. medium levels of ego-involvement and that these differences are not due to chance alone.

Table 29

MANCOVA Multivariate Effects (N =301)

Variable	Positive Affect				Negative Affect			
	df	SS	MS	F	df	SS	MS	F
Gender	1	.021	.021	.060	1	<.001	<.001	.000
Age	1	.159	.159	.449	1	.406	.406	1.078
Year of Study	1	.019	.019	.053	1	1.167	1.167	3.099
Ethnicity	1	.000	.000	.000	1	.928	.928	2.466
Program Gender Composition	1	.016	.016	.045	1	.010	.010	.027
Win/Loss	1	.806	.806	2.273	1	1.621	1.621	4.305*
Task-Orientation	1	4.942	4.942	13.936**	1	<.001	<.001	.000
Ego-Orientation	1	.299	.299	.844	1	.084	.084	.224
Task-Involved Peer Climate	2	11.679	5.840	16.465**	2	1.512	.756	2.008
Ego-Involved Peer Climate	2	.119	.060	.168	2	6.316	3.158	8.389**
Task-Involved Peer Motivational Climate * Ego Involved Peer Motivational Climate	4	3.026	.757	2.133	4	.276	.069	.183
Error	284	100.723	.355		284	106.918	.376	
Total	301	4481.647			301	1055.745		
Corrected Total	300	134.150			300	126.353		

*Significant at the $p \leq 0.05$ level. ** Significant at the $p \leq 0.001$ level.

Table 30

Descriptive Statistics of the Three Levels of Task-Involvement on Positive and Negative Affect

Constructs	Positive Affect		Negative Affect	
	M	SD	M	SD
Low Task-Involvement	3.42*	.613	1.95	.672
Medium Task-Involvement	3.81*	.617	1.73	.628
High Task-Involvement	4.11*	.592	1.63	.612

*Statistically different groups at the $p < .05$ level.

Table 31

Descriptive Statistics of the Three Levels of Ego-Involvement on Positive and Negative Affect

Constructs	Positive Affect		Negative Affect	
	M	SD	M	SD
Low Ego-Involvement	3.84	.630	1.47*	.462
Medium Ego-Involvement	3.78	.659	1.76*	.627
High Ego-Involvement	3.82	.714	2.02*	.712

*Statistically different groups at the $p < .05$ level.

Summary of Findings

This study's third and fourth research questions were addressed by using a

statistical procedure which measures significant differences between groups of an

independent variable. Furthermore, since the independent variable in this study was

collected and represented as a continuous numerical variable it had to be transformed into

a discrete variable with distinct categories. A cluster analysis was used in this research to

transform the continuous, interval level task- and ego-involved peer motivational climate

variables into discrete, ordinal level variables containing the groups of high, medium, and

low task- and ego- involvement. A hierarchical cluster analysis was used to determine

whether the three group solution was the most appropriate way to represent both the task- and ego-involved peer climate variables. This analysis confirmed that the three cluster solution provided the lowest number of groups that each yielded homogenous case values and were mutually distinct from the other groups. Furthermore these groups were created on SPSS using the more reliable non-hierarchical method.

A MANCOVA was then utilized to address the third and fourth research questions of this study. The third research question (a*re there significant differences in positive and negative affective outcomes of intramural sports participation between high, medium and low levels of task-involved peer motivational climates?)* was accompanied by two hypotheses, $H3.1_1$ and $H3.2_1$, and their respective null hypotheses. The fourth research question (*are there significant differences in positive and negative affective outcomes of intramural sports participation between high, medium and low levels of ego-involved peer motivational climates*?) was also accompanied by two research hypotheses, $H4.1_1$ and $H4.2_1$, and their respective null hypotheses.

$H3.1_0$: There is no significant difference between high, medium and low levels of task-involved peer motivational climates and the positive affective outcomes of participating in intramural sports.

$H3.1_1$: There is a significant difference between high, medium and low levels of task-involved peer motivational climates and the positive affective outcomes of participating in intramural sports.

The MANCOVA revealed that, when controlling for the covariates of age, gender, year of study, ethnicity, program gender, win/loss and orientation towards sport participation, there is a significant difference between high, medium and low levels of

task-involved peer motivational climates and the positive affective outcomes of participating in intramural sports. Regarding these findings, the alternative research hypothesis ($H3.1_1$) will be accepted as one of the proper explanations for the third research question. Furthermore, post-hoc analysis revealed that there were significant differences between all three levels of task-involvement on positive affect.

$H3.2_0$: There is no significant difference between high, medium and low levels of task-involved peer motivational climates and the negative affective outcomes of participating in intramural sports.

$H3.2_1$: There is a significant difference between high, medium and low levels of task-involved peer motivational climates and the negative affective outcomes of participating in intramural sports.

The analysis revealed that, when controlling for the covariates of age, gender, year of study, ethnicity, program gender, win/loss and orientation towards sport participation, there is no significant difference between high, medium and low levels of task-involved peer motivational climates and the negative affective outcomes of participating in intramural sports. Due to these results the null hypothesis ($H3.2_0$) will be accepted as the other proper explanation for the third research question.

$H4.1_0$: There is no significant difference between high, medium and low levels of ego-involved peer motivational climates and the positive affective outcomes of participating in intramural sports.

$H4.1_1$: There is a significant difference between high, medium and low levels of ego-involved peer motivational climates and the positive affective outcomes of participating in intramural sports.

As a result of the MANCOVA it was found that, when controlling for the covariates of age, gender, year of study, ethnicity, program gender, win/loss and orientation towards sport participation, there is no significant difference between high, medium and low levels of ego-involved peer motivational climates and the positive affective outcomes of participating in intramural sports. Due to these results the null hypothesis (H4.1$_0$) will be accepted as one of the proper explanations for the fourth research question.

H4.2$_0$: There is no significant difference between high, medium and low levels of ego-involved peer motivational climates and the negative affective outcomes of participating in intramural sports.

H4.2$_1$: There is a significant difference between high, medium and low levels of ego-involved peer motivational climates and the negative affective outcomes of participating in intramural sports.

The MANCOVA revealed that, when controlling for the covariates of age, gender, year of study, ethnicity, program gender, win/loss and orientation towards sport participation, there is a significant difference between high, medium and low levels of ego-involved peer motivational climates and the negative affective outcomes of participating in intramural sports. Due to these results the alternative research hypothesis (H4.2$_1$) will be accepted as the other proper explanation for the fourth research question. Furthermore, post-hoc analysis revealed that there were significant differences between all three levels of ego-involvement on negative affect.

Discussion

The purpose of this descriptive, non-experimental, survey study was to examine peer motivational climate, a concept with roots in Achievement Goal Theory and Self-Determination Theory, and find out its effect on the positive and negative affective outcomes of intramural sport participation. The research objectives of this study included, first, examining the reliability and validity of the subscales within these questionnaires when used with a university aged sample utilizing a PCA and Cronbach's Alphas. The second research objective was to determine the relationship between the independent and dependent variables of this study while controlling for covariates using hierarchical regression analyses. The third objective was to determine whether there were significant differences in positive and negative affective outcomes of intramural sports participation between high, medium and low levels of task- and ego-involved peer motivational climates using a MANCOVA. However, a cluster analysis was needed to transform the continuous independent variables of task- and ego-involved peer motivational climate into discrete variables separated by the categories of high, medium and low levels. This chapter examines the findings of this study and compares them to the work of previous research that had a role in determining the direction of this study.

Principle Components Analysis – Explanation of Discrepancies

As indicated in the results section, factor analyses revealed that all 13 items of the TEOSQ (task- and ego-orientation), all 21 items on the PeerMCYSQ (task- and ego-involvement) , and all 20 items of the PANAS (positive and negative affect) loaded onto their two main subscales accordingly demonstrating internal consistency. Alpha coefficients for these same subscales were also high thus indicating substantial reliability.

These analyses support other studies that have also found that the 13 item TEOSQ is a reliable and valid measure of sport orientation with items loading consistently onto the task- and ego-orientation factors and yielding high alpha coefficients for each factor (Duda, 1989). Furthermore the TEOSQ has shown this same internal consistency across cultures (Castillo et al., 2009). These analyses also agree with other studies that have also found that the 20 items on the PANAS loaded onto the factors of positive and negative affect accordingly, over a value of .5, in addition to yielding high alpha coefficients demonstrating significant reliability (Watson et al. 1988; Crawford and Henry, 2004). Additionally, the PCA and Alpha Coefficients agree with Ntoumanis and Vazou (2005) that the PeerMCYSQ sufficiently measures the variables of task- and ego-involved peer motivational climate with high reliability.

Discrepancies were, however, observed in the factor loadings for the Relatedness/Support and Intra-team Competition facets of peer motivational climate. With regards to Relatedness/Support, two of the items from this dimension loaded with items from other factors leaving it represented with only one item on the PeerMCYSQ. Additionally, alpha coefficients for Relatedness/Support were very low. With these discrepancies in mind, it was decided that Relatedness/Support would be eliminated as a measurable variable in this study. The second research question of this study (*What is the relationship between the five domains of peer motivational climate [Improvement, Relatedness/Support, Effort, Intra-team Competition and Intra-team Conflict] and the two aspects of affective outcomes, positive affect and negative affect)* was then reworded by removing 'Relatedness/Support'.

These findings differ dramatically from the study by Ntoumanis and Vazou

(2005) in which the PeerMCYSQ was constructed. In their study all three items intended

to measure Relatedness/Support loaded properly onto that factor at a value above .6. In

this research study only the item '*Care about everyone's opinion*' loaded onto the

Relatedness/Support factor with an amount greater than this study's criteria of .5.

Furthermore, Relatedness/Support, as a dimension of the PeerMCYSQ, typically yields

satisfactory alpha coefficients demonstrating reliability. For instance, this dimension

yielded a score of $\alpha = .73$ in Ntoumanis and Vazou, $\alpha = .72$ in Joesaar et al. (2011), $\alpha =$

.81 in Smith et al. (2010), $\alpha = .73$ in Vazou et al. (2006) and above .70 in Vazou (2010).

In this study, however, the alpha coefficient for Relatedness/Support was only $\alpha = .64$.

The reasoning behind this stark contrast in reliability may lie in the fact that the

PeerMCYSQ is the first questionnaire measuring peer motivational climate to utilize the

dimension of Relatedness/Support (Ntoumanis & Vazou, 2005). Additionally, the

PeerMCYSQ was designed for, and typically used with, youth athlete samples between

the ages of 12 and 16. It could be possible that the items in this dimension are more

reliable with this youth aged, athlete sample and not as affective at measuring

Relatedness/Support with this study's university aged participants (17 and up) in a purely

recreational setting. The qualitative study in which Relatedness/Support emerged as a

dimension of peer motivational climate came from the common themes expressed by a

sample of young athletes aged 12-16 (Vazou et al. 2005). The items of

Relatedness/Support may not carry as much weight with those 18 and older in a

recreational setting where teams are temporary, ultimately lasting two months and

meeting on a weekly basis. With this in mind, removing Relatedness/Support as a

variable in this study was likely the best decision. Future research may want to consider

finding more effective ways to phrase the items of Relatedness/Support in order to make

them more reliable measures of this dimension as it applies to individuals 17 and older.

Also, as a measure of the independent variable Intra-team Competition the item

'*Try to do better than their teammates*' was eliminated from the PeerMCYSQ as a

construct of this predictor due to not meeting the > 0.5 criteria during the PCA. For the

purpose of reliability and validity this item was eliminated in the construction of the

Intra-team Competition variable. This finding also contrasts with those of Ntoumanis and

Vazou (2005) in which the PeerMCYSQ was created in that '*Try to do better than their*

teammates' was the item that loaded most highly onto Intra-Team Competition when

compared to the other four items. It's hard to articulate why such different results were

revealed in both studies but it is apparent that, as a construct of the PeerMCYSQ, Intra-

team Competition typically yields lower reliability when compared to the other four

constructs. Alpha coefficients in Ntoumanis and Vazou's (2005) study (Improvement $\alpha =$

.77; Relatedness/Support $\alpha =$.73; Effort $\alpha = .70$; Intra-team Competition/Ability $\alpha = .69$;

Intra-team Conflict $\alpha =$.73) are similar to those in this study with the exception of

Relatedness/Support and Effort (Improvement $\alpha =$.77; Relatedness/Support $\alpha =$.64; Effort

$\alpha = .75$; Intra-team Competition/Ability $\alpha = .69$; Intra-team Conflict $\alpha =$.73). In both

studies Intra-team Competition never seems to yield an alpha coefficient over .70 as is

recommended by Tabachnick & Fidell, (2007). Furthermore, Intra-team Competition

tends to yield lesser scores, below .7, for reliability in several studies which utilized the

PeerMCYSQ such as $\alpha = .43$ in Joesaar et al. (2011), $\alpha = .66$ in Smith et al. (2010), $\alpha =$

.69 in Vazou et al. (2006) and $\alpha = .69$ again in Vazou (2010). Each of these studies warns

the reader that they had to approach this dimension with caution in regards to this low reliability.

In constructing the PeerMCYSQ Ntoumanis and Vazou (2005) made the decision to ignore the rather low reliability coefficients in this dimension. However, this does mean that the items in Intra-team Competition do demonstrate less reliability and are not very internally consistent compared to the other dimensions. The items in Intra-team Competition may have more trouble than other dimensions, with alpha's well above .70, in measuring what they are supposed to measure across multiple studies that use the PeerMCYSQ. This may be why, in this study, the particular item '*Try to do better than their teammates'* didn't load with the other four items. With this being the case it may not be that surprising that an alteration needed to be made to this particular dimension in order to be a more reliable measure of Intra-team Competition with this study's sample.

Peer Motivational Climates and the Psychological Outcomes of Sport

This section intends to explore the results obtained from the four regression analyses conducted for this study which directly answer the first and second research questions. In addition, it compares these results to those of previous research that had a role in determining the direction of this study. Though, to date, no research has looked at the relationship between peer motivational climate and affective outcomes, many comparisons can be made when looking at the dependent variables of this study and others' in a more general sense as positive and negative psychological outcomes.

Dependency of Positive Psychological Outcomes on Task-Involved Climates.

Task-involved peer motivational climate was a positive predictor of positive affect. This finding is very similar to other research that found a significant and positive

relationship between task-involved peer motivational climates and psychological outcomes in a sports context that are also positive in nature. This includes increased physical self-worth and enjoyment (Vazou et al., 2006; Smith et al. 2010). In addition, Jõesaar et al. (2011) showed a positive relationship between task-involved climates and higher levels of autonomy, competence and relatedness need satisfactions of self determination theory within a sports context. Though there is not much research behind the concepts of peer motivational climate what seems to be apparent at this point is that positive psychological outcomes are more prevalent through sport participation in which teams demonstrate and perceive a higher amount of task-involvement within their peer motivational climates.

On the other hand ego-involved peer climates had no positive or negative bearing on positive affective outcomes. Though this is counter to this study's research hypothesis that ego-involved climates would be related to positive affect demonstrating a negative relationship, this finding is not unusual and probably should be expected. Most of the research reviewed for this study, using ego-involvement as their predictor variable did not find any significant relationships between ego-involvement and the positive psychological outcomes that they measured (Vazou et al., 2006; Smith et al., 2010). What this tells us is that ego-involved climates do not predict positive psychological outcomes based on that alone. Teams that perceive predominantly ego-involved peer motivational climates would only report lower levels of positive affect if task-involvement on these teams is also low, as may often be the case. It does not seem surprising that any ego-involvement in teams would predict high or low positive affective outcomes. Teams that demonstrate less than preferred approaches to competition (i.e. outperforming teammates,

unsupportive behaviours, negative comments, blame) would probably not be conducive of anything other than negative affect. As was indicated in the previous paragraph, positive affect was significantly related to task-involved peer motivational climates and would only be determined by the level of task-involvement present on teams.

The lower order facets of task-involvement, Improvement and Effort, were also positive predictors of positive affect while Intra-team Competition and Intra-team Conflict, from ego-involvement, were not significant predictors. With regards to research examining these particular predictors and comparable positive psychological benefits, these results are similar to those of Vazou et al. (2006). These authors explain that the Improvement and Effort facets of task-involved climates were significant predictors of enjoyment in sports. Additionally, the facets of Intra-team Competition and Intra-team Conflict were not significant predictors of enjoyment. Again, it doesn't seem surprising that positive affect is positively related to the facets of task-involved climates while not at all related to the facets of ego-involved climates. Teams that exemplify Intra-team Competition (i.e. outperforming teammates) and Intra-team Conflict (i.e. blame and negative comments) would not simply score lower on positive affect due two those to aspects alone. These would also have to be teams which are lacking in the facets of Improvement (i.e. encouragement and positive feedback) and Effort (i.e. dedication, emphasis on performance). On the other hand, teams that exemplify the facets of Improvement and Effort would likely experience greater amounts of positive affect.

Negative Psychological Outcomes – The Affect of Both Motivational Climates

Task-involvement demonstrated a modest negative relationship while ego-involvement showed a modest positive relationship. What this might tells us is that teams

that had a high task-involved climate also had athletes reporting less negative affect while teams reporting low task-involved climates also reported more negative affect. This is not surprising since teams that possess task-involving qualities (i.e. encouragement and positive feedback, equal treatment of teammates, friendly atmospheres, cooperation with each other) would probably have more content athletes. When these task-involving qualities are perceived to be lacking by athletes negative affective states may be more likely. A negative relationship between task-involved climates and other negative psychological outcomes was found in a study by Smith et al. (2010). Here these authors reveal that perceptions of task-involved peer created motivational climates had negative relationships with reduced sense of accomplishment, sport devaluation burnout, and higher perceived stress occurring while playing a sport. What seems to be apparent is that in order for athletes to have the most positive experience in a sport, a task-involved climate should not only be present in small amounts but should manifest the team's motivational climate. A team that seems to be lacking in task-involved qualities will be more conducive of negative psychological outcomes.

Meanwhile, teams that showed a more ego-involved climate also had athletes report more negative affect. Not much research has explored the connection between ego-involved climates and negative affective outcomes. However, what has been found was that ego-involved peer climates accounted for a significant proportion of the variance in sport trait anxiety, though this was only when coach created climate was included as a variable as well (Vazou et al. 2006). Both the results of this study and Vazou's in some capacity seem to point towards ego-involvement leading to negative psychological outcomes. However it may not be correct to defend such a claim at this point when little

amounts of research have found this connection. This may warrant future research to discover whether there is a connection between ego-involved climates and negative psychological outcomes in the hopes of adding to the knowledge behind peer motivational climate.

With regards to the fourth regression model, also using negative affect as the outcome variable, it was found that, though variance in the model increased, it was the facets of Effort, Intra-team Competition and Intra-team Conflict that were significant predictors. All three were related to negative affect as hypothesized with Effort being a negative predictor while Intra-team Competition and Intra-team Conflict were positive predictors. The independent variable of Improvement was not a significant predictor in this model. These findings differ from those found by Smith et al. (2010) who, using sport devaluation burnout and emotional physical exhaustion as negative psychological dependent variables, determined that Intra-team Conflict was the only facet of ego-involved climates that predicted these outcomes. The differences in this study's finding and those by Smith et al. (2010) may have to do with the fact that both studies used different dependent variables and it may be somewhat arbitrary to compare the results of these two studies. Additionally, these results found by Smith et al. were found by those participating in individual sports only.

Similar to what was indicated in research question one with regards to the relationship between ego-involved climates and negative psychological outcomes, more research is needed that looks at how the facets of peer-motivational climate relate to the psychological outcomes of athletic participants. This could help add to the knowledge behind peer motivational climate. Until then, the relationship between the facets of peer

motivational climate (Improvement, Effort, Intra-team Competition, and Intra-team Conflict) on negative affective outcomes and other more negative psychological outcomes is not very clear.

Further Examination of Directional Relationships

This section seeks to further explore the relationships found between task- and ego-involved peer motivational climates on positive and negative affect. This was done by utilizing a MANCOVA which compared the values of positive and negative affective outcomes between the groups of high, medium, and low levels of task- and ego-involved peer motivational climate thus answering the third and fourth research questions of this study. By examining the effect that these variables have on each other utilizing a different method of analysis we are provided with further theoretical backing behind the relationships discussed between the concepts being explored in this study. The extent to which these values of positive and negative affect differed from each other would provide additional evidence behind the direction and strength of the relationships found by the first two regression analyses.

Task-Involvement and Affective States.

What was initially found was that there were significant differences between all levels of task-involvement on positive affect. Deeper examination of this data revealed that individuals reporting high amounts of task-involvement also reported the highest amounts of positive affect while those reporting low amounts of task-involvement reported lower amounts of positive affect. Furthermore, individuals reporting medium amounts of task-involvement also, on average, reported amounts of positive affect in between the high and low task-involvement groups. This analysis also supports the

positive relationship suggested in the first hierarchical regression analysis between task-involved climates and positive affect. Specifically, the more that a peer climate is perceived as task-involved, the more amounts of positive affect individuals will experience. Contrastingly, the less task-involved a peer climate is perceived by an athlete, the less amounts of positive affect individuals will experience. Furthermore this finding, again, supports those indicated by Vazou et al., (2006), Smith et al. (2010) and Jõesaar et al. (2011) in which task-involved peer motivational climates seem to predict higher amounts of positive psychological outcomes (i.e. physical self-worth, enjoyment and the satisfaction of needs) as reported by the participants of these studies.

Another finding from the MANCOVA conducted was that there were no significant differences between any of the levels of task-involvement on negative affect. However, what was determined in the second hierarchical regression analysis was that a significant and negative, though weak, relationship existed. Further analysis of the MANCOVA data shows that there is still a directional relationship with the data, even if the differences shown were not significant. Those who reported low-task involvement also reported the highest amount of negative affect while those that reported high-task involvement also reported the lowest amount of negative affect. Meanwhile those indicating medium amounts of task-involvement were again in the middle of the high and low task-involvement groups.

A clear relationship, though if not significant, exists in this data. This relationship agrees with other studies that found that task-involved peer motivational climates, when lacking, predict higher amounts of negative psychological outcomes. For instance, a reduced sense of accomplishment, sport devaluation burnout, and higher perceived stress

occurring while playing a sport was more prevalent on teams where task-involvement was lacking (Smith, 2010). However, it could be said that the differences between high, medium and low levels of task-involvement on negative affective states are not very pronounced. This lack of a significant difference between the three groups could defend the notion that the relationship between task-involvement and negative affect, though present, is weak as was seen in the second hierarchical regression. It is clear though that when task-involvement is separated into categories of high, medium and low the differences were not significant enough to be able to say that they are not due to chance alone.

Ego-Involvement and Affective States.

What was also found in the MANCOVA was that there were no significant differences between any levels of ego-involvement (high, medium, and low) on positive affect. These results support what was reported in the first hierarchical regression analysis, namely, that an ego-involved climate alone does not predict any amount of positive affect. This is made clear through further inspection of the data examined in the MANCOVA in which the scores reported for each ego-involvement group (high, medium, and low) show very small differences. The values for positive affect experienced by the high, medium and low ego-involvement groups, which can range from anywhere within 1-5, were almost equal with the highest and lowest amounts only differing by a value of .006. Additionally, those scoring medium levels of ego-involvement scored the lowest amount of positive affect which does not fit any hypothesized relationships in this study. What is being made clear is that there really is no real relationship between ego-involvement and positive affective outcomes nor are

there any significant differences. These analyses further support those similar results from research explained earlier that were unable to find a significant relationship between ego-involved climates and positive psychological outcomes (Vazou et al., 2006; Smith et al., 2010). It is again being made apparent that no amount of ego-involvement can predict any amount of positive affective or positive psychological outcomes in sports without the mediation of task-involvement.

There were significant differences between the three levels of ego involvement on negative affect. Further examination of these data supports the relationship specified by the second regression analysis that showed a positive relationship between ego-involved peer motivational climates and negative affect. Specifically, those who indicated perceiving high amounts of ego-involvement reported the highest scores for negative affect while those who indicated perceiving low amounts of ego-involvement reported the lowest scores for negative affect. Those who reported medium amounts of ego-involvement were, on average, in the middle of the high and low level groups for negative affect values. There is a clear positive relationship between ego-involved climates and negative affect. Though this MANCOVA supports the relationship found in the second hierarchical regression, there is still little research to back up the relationship between ego-involved climates and negative psychological outcomes such as negative affect. This connection is made apparent in this study but is in need of more research for further theoretical backing.

Limitations

Several aspects of this research may limit the trustworthiness of the data collected and, therefore, the findings of the study. Some of these limitations are internal and were

involved with how this study was designed. Other limitations were external and were concerned with the generalizability of the data collected.

Internal: Research Design

One of the design related limitations simply has to do with the quantitative methods utilized. On the one hand, a quantitative research study is very useful for statistically validating relationships or systematic influences between variables obtained through numerical or categorical data. On the other hand, the survey structure in this study may also pose as a limitation since it predominantly uses closed ended Likert-scale responses. This tends to force participant responses to conform to the standards put forth for this survey even though they may not fit into the categories as presented. It also reduces participants' ability to expand upon, and give further insight into, their responses as is a common limitation of quantitative research.

The participants of this study also do not compose a random sample thus breaking the independence of observations assumption of MANCOVA. Sampling was purposive in this study and it was felt that the best way to approach intramural participants was to make surveys available to them and let them complete it at their own convenience. This was an effective sampling method in that it made intramural participants very accessible to the researcher and lead to a large amount of survey submissions. In addition, being in the intramural sport context was helpful in ensuring that only intramural participants completed the surveys, as was the intention of this study. Utilizing a sample that is not random does not invalidate the results of the MANCOVA analysis, however, it does typically increase the chance of a type I error (Tabachnick & Fidell, 2007). In that regard, caution is warranted in the interpretation of the results of the MANCOVA.

Another design related limitation includes the decision to only distribute surveys on campus property. Ethics and time limitations dictated that surveys could only be distributed on campus. Though this allowed the researcher to recruit participants from most of the sports programs held by the university's Recreational Services department, the ice-hockey players were excluded from the sample as a result. This occurred because the intramural ice-hockey program occurs at an arena off of campus grounds. Data collected by ice-hockey players could have provided some additional insight to this research. However there may be another limitation lying within the decision to survey students from as many intramural programs as possible. Though surveying students from multiple sports provides the viewpoints of a more diverse set of athletes it also leads back to a very large population of all intramural athletes. The study's sample of 315 participants from multiple sports may not be as representative of all intramural participants as this same sample size would be for participants from one sport.

Considering the fact that the study sample was drawn from one university, it could be said that the use of participants from one post-secondary institution may reduce the overall generalizability of the results obtained. There may be qualities of the students at the institution studied that may differentiate them from students at other universities. The conclusions drawn from this study may not be as applicable to intramural athletes at other institutions as they are at the one where the sample was drawn. Additionally, the ability to use the PeerMCYSQ as a measurement tool with a university sample may warrant some scrutiny. It was made clear that this survey was created for adolescent participants (Ntoumanis & Vazou, 2005) and it is also a fairly new survey that has not yet been tested in a university sample until now. Regardless, its ability to be utilized with

university aged participants was something that was to be observed during data analysis in this study. This is the reason why a principle components analysis and Cronbach's alpha were used for the PeerMCYSQ in addition to the PANAS and TEOSQ. As a result, one item had to be removed when constructing one of the PeerMCYSQ's lower order dimensions used as an independent variable in this study (i.e. Intra-team Competition). In addition, the Relatedness/Support dimension had to be completely removed due to poor internal consistency. Since the PeerMCYSQ was designed for youth participants it may have needed a few alterations in order to be a reliable and valid measure of peer motivational climate as perceived by university aged participants.

External: Generalizability of Data

Some of the limitations in this research also have to do with external aspects which relates to the generalizability of the data collected. With regards to the demographics in this study, some of those collected were highly skewed including the significant proportion of participants identifying themselves as Caucasian. Most students at the university participating in intramural sports are Caucasian and these results might more accurately represent the intramural athlete population at the university in this way. This is an example of the point brought up before in which qualities of students at this post secondary institution may differ from students at others. It is clear that this study does not examine ethnic differences as well as other studies using a sample that is more proportionate in different ethnicities would have. However this study does tend to reflect the proportion of different ethnicities at the university in which this study took place, especially those participating in intramural sports at the school, as a significant amount of these students are Caucasian. Results from this research can more likely be effectively

applied to the general population at the university itself and can have several implications for recreational services at this campus.

Level of competition may also be a covariate worth analyzing in future studies such as these. This was proposed as a covariate to be measured in this particular study. However, it was noticed during data collection that many participants in this sample were unsure of which level of competition they were in and may have indicated the wrong answer. Additionally, this demographic variable was also the most skipped over question in the general information section of the questionnaire yielding the most amount of missing data. In the end, it was felt that the responses collected for this covariate would not provide very reliable and valid information and it was left out of the analysis. Level of competition may be worth including in a study such as this as a covariate in the future. This is because the competitiveness of one's program may affect the motivational climate created by peers. For instance, ego-involved climates may be more prevalent in highly competitive programs or programs that have participants which are far more skilled. Therefore, level of competition may be a factor that one would want to take into account when measuring perceived peer motivational climate and its affect on an individual's psychological outcomes.

Negative affect was also very positively skewed in this study. Though not a critical issue, such a distribution of a dependent variable may have been problematic for the analyses conducted in this study as many of them assume normal distribution of data (i.e. multiple linear regressions and MANCOVA). Because of this, the results yielded from analyses using negative affect as a dependent variable should be interpreted with caution. However, it should be noted that it may not be surprising that most students

didn't feel negative emotions post participation. Intramural sports are recreational in nature and take place for the enjoyment of the participant. While some individuals may (and some did) feel some negative affective outcomes post participation it wouldn't be surprising if most participants scored lower on negative affect. It is important that recreational sports be studied for the purpose of contributing knowledge towards this facet of recreation and leisure studies. Regardless, a study such as this may also have some use in a more serious sport environment where more ego-involved climates may be prevalent and greater amounts of negative affective states could be expected. These environments would provide a more even distribution of the independent and dependent variables making them more appropriate for regression analyses and MANCOVA's yielding more generalizable results.

Implications

The overall purpose of this study was to determine how the two types of peer motivational climates, task-involved and ego-involved, were related to the affective states, positive and negative, students experienced from participation. Considering that peer motivational climate is a relatively young and unoccupied body of knowledge it was also within the goals of this research to further study this concept to increase knowledge of both its theoretical underpinnings in addition to its practical application.

Implications for Theory

Stemming from studies which analyzed coach and parental influences on the quality youth sport, peers were proposed as another important factor to take into account. The results of this study supported authors such as Smith (2003) and Wenztel (1999) who indicate that peers are a significant influence on the quality of participants' overall

experience in sports. Furthermore, they support both these author's claims that this peer influence could be either beneficial or damaging. Specifically, the results of this study supported that positive experiences, or positive affect as it was labeled in this study, can occur when task-involvement in a team sport is high. Furthermore, these results also maintain that negative experiences, or negative affect in this research, are a result of ego-involved climates and/or climates lacking in task-involvement.

These results seems to follow a trend found in most research concerning peer motivational climate in that the presence of task-involvement in sport seems to predict positive benefits for the participant. This included increased physical self-worth and enjoyment as was found by Vazou et al. (2006) and Smith et al. (2010) in addition to increased need satisfactions, intrinsic motivation and persistence in sports as was found by Jõesaar et al. (2011). Additionally, the finding that negative consequences can be predicted by motivational climates lacking in task-involvement was similar to the findings of Smith et al. (2010) in that higher perceived stress, reduced sense of accomplishment and sport devaluation burnout occurring while playing a sport was associated with lower scores on task-involving elements of motivational climate. There isn't enough research to support this study's finding that ego-involvement is related to increased negative consequences, which in this study was negative affective states, but future research utilizing the PeerMCYSQ could help support or affix this claim.

This study can also add towards the more mature body of knowledge behind positive and negative affective states, specifically, the use of these concepts in sports related research. Positive and negative affect can act as an effective way of measuring the quality of one's experience playing a sport as it was used in this study. Quite simply the

PANAS can help label one's experience with a sport as positive or negative by identifying the extent to which participants are feeling a set of positive or negative emotions at a certain point in time. For this research, this point in time was right after participants' games ended, but other research may choose to do this during a game. By using positive and negative affect as an outcome detailing one's experience playing sports, we can measure many factors within the sports themselves that could act as antecedents to the quality of one's experience. Research being used in this way could help find out how recreational sport programs such as intramurals can be formatted in order to help participants have the best experiences possible.

An example of a study that had linked positive or negative affective states to an antecedent within the sport itself is Chang and Wong's (2008). These authors found that task-oriented goals are more associated with positive emotions while ego-oriented goals are more associated with anxiety, a facet of negative affective outcomes as explained by Watson et al. (1988). McDonough and Crocker (2007) also used a sport context to determine that intrinsic motivation and two of the concepts of self-determination theory, competence and relatedness, positively predicted positive affect. These authors also found that autonomy and competence was related to negative affective states in a reverse relationship. Lastly, Gagné, Ryan, and Bargman's (2003) study on gymnasts concluded that pre- and post-practice positive affect was determined by athletes who were intrinsically motivated while extrinsically motivated athletes, or athletes experiencing amotivation, also reported negative affective states pre- and post practice.

What these studies have in common is that by using affective states as a measureable outcome they helped determine what aspects inherent in a sport, in these

cases orientation towards sports and self-determination, help determine the quality of one's experience. With this said, it could be within the scope of this research to theorize that peer motivational climate does also have a role in determining the quality of one's experience in a sports context.

Specifically, individuals who participate in sports within a highly task-involved peer motivational climate will end up experiencing more positive affective states and, therefore, a greater quality experience. This also goes for the lower order categories of task-involved peer motivational climates and that teams that demonstrate an atmosphere of Improvement and Effort typically have the better quality experiences than those teams that are internally competitive or conflicting. It cannot be said, however, that teams that lack the qualities of an ego-involved climate or demonstrate an atmosphere which lacks Intra-team Competition and Intra-team Conflict will simply gain a better quality experience. Ego-involvement and both of its lower order categories (Intra-team Competition and Intra-team conflict) in this study, similar to previous research, do not have an effect on positive affective outcomes on their own. In order for a good quality recreational sport experience to be had, greater amounts of task-involvement and an atmosphere of Improvement and Effort will need to characterize the peer created motivational climate of a team.

Furthermore, those who participate in a peer motivational climate where qualities of a task-involved climate are lacking will have a lesser quality experience based on greater perceptions of negative affect. It should be noted that, due to the problematic and skewed distribution of negative affect in this study, this interpretation could be up for argument and does warrant future research to try and confirm this relationship. To add to

this, analyses on the lower order categories of task-involvement on negative affect were somewhat more complicated than their relationship with positive affect. Only Effort emerged as a significant predictor of negative affect in the current study demonstrating a negative relationship while Improvement had no significant prediction. It could be said that teams lacking an atmosphere of Effort will have a lesser quality experience characterized by the indices of negative affect while any presence of Improvement does not predict this outcome in any way. However, it may be in the best interest to further explore this relationship since it seems as though a lack of the Improvement facet should lead to negative affective states and, therefore, a lesser quality experience similar to the Effort facet. The non-significant prediction may simply be due to the nature of this study's data (i.e. positive skew of negative affect) and more research on this relationship may be necessary.

It is also theorized, based on the results of this study, that a lesser quality experience characterized by negative affective states will also occur with those who play sports in peer motivational climates which are highly ego-involved. The lower order categories of ego-involvement also show a significant positive relationship with negative affective outcomes. It could then be said that teams demonstrating an atmosphere of Intra-team Competition and Intra-team Conflict will have individuals regarding the experience as one of a lesser quality. However it should be said again that negative affect was a problematic variable in this research. Furthermore the relationship between ego-involved climates and negative psychological outcomes such as negative affect is not well established in research. With these limitations in mind it is recommended that

further exploration of the relationship between ego-involved climates and negative psychological outcomes is carried out in future research.

Implications for Practice

These findings should be taken into consideration by intramural co-coordinators and sport practitioners. From the post-secondary student responses, there are indications that peer motivational climates are an antecedent to the positive or negative experiences gained from participation. Specifically, the positive affective states reported by students are predominantly influenced by highly task-involved climates and negative affective states are reported by students who feel that the qualities of a task-involving climate are lacking. Ego-involved climates, on the other hand, are only related to negative affective outcomes and do not predict positive affect. With this in mind it may be ineffective to simply just find ways to discourage the prevalence of ego-involving qualities in a team sport. However, facilitating task-involvement in intramural sports may lead to more positive affective states of those participating, and consequently, a greater experience with the intramural program.

Campus recreational professionals and sport practitioners need to determine what goes into these programs that allows for the most positive outcomes possible. Students have identified that their experience in the intramural sport programs studied were more positive when team climates are task-involved. Ames (1992) may have the most intuitive guidelines on how these motivational climates can be facilitated with TARGET which highlights the areas that should be addressed; task, authority, recognition, grouping, evaluation, and time:

In a task-involving climate, activities that make learning interesting and involve variety and personal challenge are promoted (task), athletes are involved in the decision making and have a choice of tasks (authority), rewards are perceived as informative and recognition is provided based on personal improvement and progress (recognition), opportunities for cooperative group learning and peer interactions are provided (grouping), evaluation is based on personal improvement and task mastery (evaluation), and the time allocated for completing learning activities is adjusted to meet the athletes' needs (time) (Ames, 1992, p. 173).

It would be unfair to say that intramural sports are ineffective at promoting task-involving climates. It can already be said that these activities do utilize some of these aspects such as providing participants with sufficient autonomy (authority) and opportunities to interact and meet new people (grouping). Additionally, intramural participants in this study did report low amounts of negative affect and significantly higher amounts of positive affect indicating that task-involved climates may already be prevalent in many of their programs. Regardless, this is information that campus recreation professionals can still find helpful. It also goes without saying that anyone with an authoritative position in recreational sport programs (i.e. managers, coaches, owners) seeking to promote positive experiences in their athletes should consider the facilitation of task-involved peer motivational climates.

Future Research

Peer motivational climate requires more research dealing with sport psychology or the social psychology of leisure as this is a relatively new and underexplored topic that

could be relevant in these areas of study. Future research should consider comparing the facets of peer motivational climate to additional positive or negative psychological outcomes. This could include simple but measureable outcome variables such as self-esteem or even more complex dependent variables such as the constructs involved in the sport commitment model (Scanlan, Simons, Carpenter, Schmidt & Keeler, 1993). Findings such as these could further the relationship between positive or negative psychological outcomes and task- and ego-involved peer motivational climates thus further adding to the knowledge behind these fairly new concepts.

Another suggestion would be to continue to study peer motivational climate with a post-secondary sample as most research exploring this topic tends to focus on youth. It may also be a good idea to distribute surveys to post-secondary students from multiple universities. This could allow for a much more representative sample size in that unique qualities between students at different universities could be accounted for and provide more compelling findings. Another variation on the current study would be to examine students participating in one sport. Though surveying multiple sports provides the viewpoints of a diverse set of athletes it also leads back to a very large population of all intramural athletes. One intramural sport would have a much smaller population and a more representative sample.

If affective states are still an outcome of interest it may be useful to look at peer motivational climate in more professional or serious sports. As indicated, intramural sports take place for the enjoyment of the participant and seem to result in more positive affective states. Due to the non-competitive nature of these programs negative affective states may be scored very low on average leading to a more positively skewed

distribution among these participants similar to what was found in this study. In contrast to intramural programs, Gaudreau et al. (2009) point out the demanding and often challenging nature of a more competitive athletic environment. For instance, they point out the importance of significant athletic progress and that athletes are often accepted or declined to join more intermediate leagues based on ability. In addition, athletes who fail to keep up with the high standards of these intermediate leagues may be let go. It is pressures like these that could make a more even distribution of positive and negative affective states than in the recreational context. In addition, a competitive league where intra-team competition and conflict may be encouraged is likely to be more conducive of ego-involved peer motivational climates as perceived by athletes. To put it simply, a more serious sports environment could provide a different angle on the relationship between the constructs explored in this study.

Conclusion

This study set out to find the relationship between peer motivational climate in an intramural sports context and the affective outcomes individuals gained from participation. The specific motivational climates included task-involved climates with emphasis on Improvement, Relatedness/Support and Effort and ego-involved climates with an emphasis on Intra-team Competition and Intra-team Conflict. Positive and negative affect were tested as the outcomes that resulted from participation in these intramural programs. Through the use of quantitative surveys and several hierarchical regression analyses it was determined that task-involved peer motivational climate, in addition to its lower order categories of Improvement and Effort, were positive predictors of positive affect. Additionally it was found that task-involved climates, including one of

its lower order facets of Effort, predicted negative affect demonstrating a reverse relationship. Negative affect was also positively predicted by ego-involved peer motivational climates including its lower order categories of Intra-team Competition and Intra-team Conflict. MANCOVA's helped determine significant differences between high, medium and low levels of task- and ego-involved peer motivational climates on affective outcomes. This helped aid in describing the strength and direction of the relationships between these variables tested by the regression analyses. Specifically, there were significant difference between all levels of task-involvement on positive affect and all levels of ego-involvement on negative affect.

These findings help add towards the body of knowledge behind peer motivational climate by showing how the experiences of athletes are affected by the peer created motivational climates present in sports. Specifically, this study provides more evidence behind promoting task-involved climates in a sports context in that they tend to lead to more positive psychological benefits for those who participate. Furthermore it extends the concept of peer motivational climate, typically used in a youth setting, to that of a university setting in which peers are likely one of the more predominant motivational cues. Future research should continue to look at peer motivational climate with a university sample, and could also consider exploring more serious or professional sports programs.

Recreational sports practitioners including intramural co-coordinators could use this information as it is apparent that the motivational climate in sports could have an important bearing on participants' experience with a program. Ensuring that recreational sport participants are gaining the most benefits possible from participation and keeping

their experiences positive can bolster turnout rates for these programs. This can, in turn, solidify the importance of recreational sports, especially those intramural programs which struggle for legitimate inclusion in post secondary institutions.

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Appendix A – Research Questionnaire

Please invest a few moments of your time to provide information about your current intramural sports participation here at Brock University. This survey will only take 10 minutes of your time.

SECTION I: General Information

1. Gender (please check one): ❑ Male ❑ Female
2. Age: _____ (years)
3. Year of Study: ❑ 1st year ❑ 2nd year ❑ 3rd year ❑ 4th year ❑ 5th year or higher ❑ Graduate
4. Ethnicity: ❑ African Canadian ❑ Asian Canadian ❑ Hispanic/Latino ❑Caucasian
 ❑ Other
5. Intramural Division: ❑ Competitive A ❑ Competitive B ❑ Recreational ❑N/A
6. Program's gender composition? ❑ Men ❑ Women ❑ Co-ed
7. What Intramural Sports do you participate in? (please check all that apply)
 ❑ Slow Pitch ❑ Flag Football ❑ Ball Hockey ❑ Ultimate Frisbee
 ❑ Inner Tube Water Polo ❑ Outdoor Soccer ❑ Basketball ❑ Badminton
 ❑ 4's Volleyball ❑ Singles Tennis ❑ Ice Hockey ❑ Floorball
 ❑ European Handball ❑ Squash ❑ Water Volleyball ❑ Indoor soccer
 ❑ Other_____
8. In the last game I played I (or my team) ❑ Won ❑ Lost

In sports I feel most successful when…	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. I'm the only one who can do the play or skill.	1	2	3	4	5
2. I learn a new skill and it makes me want to practice more.	1	2	3	4	5
3. I can do better than my friends.	1	2	3	4	5
4. The others can't do as well as me.	1	2	3	4	5
5. I learn something that is fun to do.	1	2	3	4	5
6. Others mess up and I don't.	1	2	3	4	5
7. I learn a new skill by trying hard.	1	2	3	4	5
8. I work really hard.	1	2	3	4	5
9. I score the most points / goals / hits, etc	1	2	3	4	5
10. Something I learn makes me want to go and practice more	1	2	3	4	5
11. I am the best	1	2	3	4	5
12. A skill I learn really feels right.	1	2	3	4	5
13. I do my very best.	1	2	3	4	5

The Ego and Task orientation results are calculated are as follows (q=question):

- Ego Orientation = (q1 + q3 + q4 + q6 + q9 + q11) ÷ 6
- Task Orientation = (q2 + q5 + q7 + q8 + q10 + q12 + q13) ÷ 7

SECTION II – Peer Motivational Climate in Youth Sport Questionnaire

Please indicate your level of agreement to the following statements:

On this team, most athletes…	Strongly Disagree	Disagree		Neutral		Agree	Strongly Agree
1. Help each other improve	1	2	3	4	5	6	7
2. Encourage each other to outplay their teammates	1	2	3	4	5	6	7
3. Offer to help their teammates develop new skills	1	2	3	4	5	6	7
4. Care more about the opinion of the most able teammates	1	2	3	4	5	6	7
5. Make their teammates feel valued	1	2	3	4	5	6	7
6. Work together to improve the skills they don't do well	1	2	3	4	5	6	7
7. Make negative comments that put their teammates down	1	2	3	4	5	6	7
8. Try to do better than their teammates	1	2	3	4	5	6	7
9. Criticize their teammates when they make mistakes	1	2	3	4	5	6	7
10. Teach their teammates new things	1	2	3	4	5	6	7
11. Encourage their teammates to try their hardest	1	2	3	4	5	6	7
12. Look pleased when they do better than their teammates	1	2	3	4	5	6	7
13. Make their teammates feel accepted	1	2	3	4	5	6	7
14. Want to be with the most able/competent teammates	1	2	3	4	5	6	7
15. Praise their teammates who try hard	1	2	3	4	5	6	7
16. Complain when the team doesn't win	1	2	3	4	5	6	7
17. Are pleased when their teammates try hard	1	2	3	4	5	6	7
18. Care about everyone's opinion	1	2	3	4	5	6	7
19. Set an example on giving forth maximum effort	1	2	3	4	5	6	7
20. Laugh at their teammates when they make mistakes	1	2	3	4	5	6	7
21. Encourage their teammates to keep trying after they make a mistake	1	2	3	4	5	6	7

The Peer Motivational Climate in Youth Sport Questionnaire (PeerMCYSQ)
Questions and their Corresponding Variables

Task-Involved Peer Motivational Climate

1. *Improvement*
      1. Help each other improve
      3. Offer to help their teammates develop new skills
      6. Work together to improve the skills they don't do well
      10. Teach their teammates new things

2. *Relatedness Support*
      5. Make their teammates feel valued
      13. Make their teammates feel accepted
      18. Care about everyone's opinion

3. *Effort*
      11. Encourage their teammates to try their hardest
      15. Praise their teammates who try hard
      17. Are pleased when their teammates try hard
      19. Set an example on giving forth maximum effort
      21. Encourage their teammates to keep trying after they make a mistake

Ego Involved Peer Motivational Climate

4. *Intra-Team Competition/Ability*
      2. Encourage each other to outplay their teammates
      4. Care more about the opinion of the most able teammates
      8. Try to do better than their teammates
      12. Look pleased when they do better than their teammates
      14. Want to be with the most able teammates

5. *Intra-Team Conflict*
      7. Make negative comments that put their teammates down
      9. Criticize their teammates when they make mistakes
      16. Complain when the team doesn't win
      20. Laugh at their teammates when they make mistakes

SECTION III – The Positive and Negative Affect Schedule

This scale consists of a number of words that describe different feelings and emotions. Read each item and then mark the appropriate answer in the space next to that word. *Indicate to what extent you feel this way right now, that is, at the present moment*.

Use the following scale to record your answers.	Very slightly or not at all	A little	Moderately	Quite a bit	Extremely
1. Interested	1	2	3	4	5
2. Irritable	1	2	3	4	5
3. Distressed	1	2	3	4	5
4. Alert	1	2	3	4	5
5. Excited	1	2	3	4	5
6. Ashamed	1	2	3	4	5
7. Upset	1	2	3	4	5
8. Inspired	1	2	3	4	5
9. Strong	1	2	3	4	5
10. Nervous	1	2	3	4	5
11. Guilty	1	2	3	4	5
12. Determined	1	2	3	4	5
13. Scared	1	2	3	4	5
14. Attentive	1	2	3	4	5
15. Hostile	1	2	3	4	5
16. Jittery	1	2	3	4	5
17. Enthusiastic	1	2	3	4	5
18. Active	1	2	3	4	5
19. Proud	1	2	3	4	5
20. Afraid	1	2	3	4	5

Positive and Negative Affect Schedule (PANAS)
Items and their Corresponding Variables

Positive Affect (PA)	1. Interested
	4. Alert
	5. Excited
	8. Inspired
	9. Strong
	12. Determined
	14. Attentive
	17. Enthusiastic
	18. Active
	19. Proud
Negative Affect (NA)	2. Irritable
	3. Distressed
	6. Ashamed
	7. Upset
	10. Nervous
	11. Guilty
	13. Scared
	15. Hostile
	16. Jittery
	20. Afraid

Appendix B – Informed Consent

Informed Consent

Project Title: Peer Motivational Climate and its Relationship with Positive and Negative Affect in Intramural Sports

Principal Student Investigator:
Evan Webb,
Faculty of Applied Health Sciences
Brock University
Email: ew07bz@brocku.ca

Faculty Supervisor:
Dr. Scott Forrester
Associate Professor
Department of Recreation and Leisure Studies
Brock University
(905) 688-5550 Ext. 4247
Email: sforrester@brocku.ca

INVITATION
I, Evan Webb, a graduate student from the Faculty of Applied Health Sciences at Brock University, invite you to participate in a research project for a Master's thesis study entitled Peer Motivational Climate and its Relationship with Positive and Negative Affect in Intramural Sports.

The purpose of this thesis study is to compare the peer created motivational climate experienced by intramural participants with their affective states, or in other words, the positive or negative feelings that students experience from participation in the intramural programs at Brock. Should you choose to participate, you will be asked to simply fill out a short survey. Nothing else will be asked of you after you complete this survey. You may withdraw from this study at any time and if you chose to do so your data will not be used in this study. My research requires the participation of intramural sport participants only and your participation would be very much appreciated.

WHAT'S INVOLVED
As a participant, you will be asked to complete a questionnaire, answering every question truthfully, and submit it once completed. Participation will take approximately 10 minutes of your time.

POTENTIAL RISKS
There may be psychological risks associated with participation. In the questionnaire participants are asked to reflect on their peer relationships, some of which may be negative, using a questionnaire which includes such measures as how "distressed", "ashamed", "afraid" one feel when participating in their respective intramural sport. Participants may feel uncomfortable answering these questions but will have the privacy needed to answer such questions with worry of judgement from other teammates. Also any answers you provide are both anonymous and confidential.

CONFIDENTIALITY
All information you provide is considered confidential; your name will not be included or, in any other way, associated with the data collected in the study. Furthermore, because our interest is in

the average responses of the entire group of participants, you will not be identified individually in any way in written reports of this research.

Surveys collected during this study will be stored in a locked filing cabinet in Dr. Forrester's office in AS 337. Once data is inputted into the Statistical Package for the Social Sciences (SPSS) it will be stored in a password protected computer and in an external USB device (for backup purposes) that will be in the researcher's possession at all times. Data will be kept for two months after the research has been completed after which time the data will be deleted.

Access to this data will be restricted to the Principal Student Investigator, Evan Webb, and the Faculty Supervisor, Dr. Scott Forrester.

VOLUNTARY PARTICIPATION
Participation in this study is voluntary. Whether or not you participate will in no way affect your participation in intramural sports through Recreational Services at Brock University. If you wish, you may withdraw from this study at any time and may do so without any penalty or loss of benefits to which you are entitled. However, you may not withdraw from the study once you have submitted your survey as there is no way for the researcher to identify anonymous individual responses. **Participants who wish to withdraw should give their incomplete instrument to the researcher for shredding.**

PUBLICATION OF RESULTS
Results of this study may be published in professional journals and presented at conferences. Feedback about this study will be available by May 1, 2013 if you email the Principal Student Investigator Evan Webb at ew07bz@ brocku.ca) and request a copy of the results of this study.

CONTACT INFORMATION AND ETHICS CLEARANCE
If you have any questions about this study or require further information, please contact the Principal Student Investigator, Evan Webb, or the Faculty Supervisor, Dr. Scott Forrester, using the contact information provided above. This study has been reviewed and received ethics clearance through the Research Ethics Board at Brock University (File: 11-271 - FORRESTER). If you have any comments or concerns about your rights as a research participant, please contact the Research Ethics Office at (905) 688-5550 Ext. 3035, reb@brocku.ca.

Thank you for your assistance in this project. Please keep a copy of this form for your records.

CONSENT FORM
By submitting this questionnaire you have agreed to participate in this study described above. You may withdraw from this research at any moment before submission by giving the student researcher your incomplete questionnaire for shredding. However, once you have submitted your questionnaire you cannot request to have it omitted from the research as there is no way for the researcher to identify which specific questionnaire is yours.

By submitting this questionnaire you agree that you have made the decision to participate in and submit your survey based on the information that you have read in this Information-Consent Letter. Also, by submitting this questionnaire you agree that you have had the opportunity to receive any additional details you wanted about the study and understand that you may ask questions about it in the future.

Appendix C – Verbal Invitation

Survey Invitation – Verbal Script

"Hello, my name is Evan Webb and I'm a Master's Student here at Brock. I am conducting a study about peer motivational climate in intramural sports. I am looking for intramural sport participants who have just finished their games to fill out a questionnaire. This multiple choice survey will take you no more than 10 minutes to complete and the information you provide is anonymous, confidential, and will only be used for the purpose of this study.

So if you have time and if I am not disrupting you, could I interest you in filling out the questionnaire?"

If they agree I will guide them to the recruitment table, set them up with a survey and pencil

"Let me know if you have any questions. Also if you wish to withdraw from the study make sure you bring me your incomplete survey and it will be shredded. Thank you for your participation".

Appendix D – Letter of Feedback

Letter of Feedback

Dear Participant

Thank you very much for participating in this research project entitled Peer Motivational Climate and its Relationship with Positive and Negative Affect in Intramural Sports. Your data will be very useful in helping me to explore the relationship between peer created motivational climates students experience in intramural sports and the positive or negative feelings that occur as a result of these climates. The benefits of recreational activities and leisure experiences is a topic of much importance in my field and your data will go towards producing a research project that will help defend the importance of intramural sports in a university setting. Once again all data collected is anonymous and confidential. This means that the results of your questionnaire cannot be traced back to you, and the data I collect from individuals will be stored securely in a locked filing cabinet in Dr. Forrester's office and in a password protected computer and USB key (for back-up purposes) which is always in my possession.

If you wish to obtain the results of this study I would be glad to send you a copy over email. You may contact me any time after May 1st, 2013 at ew07bz@brocku.ca and request that I send you the results of my research. You may also contact me if you have any other questions pertaining to the study.

If you have any pertinent questions about your rights as a research participant, please contact the Brock University Research Ethics Officer (905 688-5550 ext 3035, reb@brocku.ca).

 Regards

Evan Webb   **Dr. Scott Forrester**

Graduate Student, Brock University   **Associate Professor, Brock University**

                                                        905-688-5550 xt.4247

ew07bz@brocku.ca   **sforrester@brocku.ca**

Appendix E – Ethics Clearance

Brock University
Research Ethics Office
Tel: 905-688-5550 ext. 3035
Email: reb@brocku.ca

Social Science Research Ethics Board

Certificate of Ethics Clearance for Human Participant Research

DATE:	7/19/2012
PRINCIPAL INVESTIGATOR:	FORRESTER, Scott – Recreation & Leisure Studies
FILE:	11-271 - FORRESTER
TYPE:	Masters Thesis/Project STUDENT: Evan Webb SUPERVISOR: Scott Forrester

TITLE: Peer Motivational Climate and its Relationship with Positive and Negative Affect in Intramural Sports

ETHICS CLEARANCE GRANTED

Type of Clearance: NEW   Expiry Date: 7/31/2013

The Brock University Social Sciences Research Ethics Board has reviewed the above named research proposal and considers the procedures, as described by the applicant, to conform to the University's ethical standards and the Tri-Council Policy Statement. Clearance granted from 7/19/2012 to 7/31/2013.

The Tri-Council Policy Statement requires that ongoing research be monitored by, at a minimum, an annual report. Should your project extend beyond the expiry date, you are required to submit a Renewal form before 7/31/2013. Continued clearance is contingent on timely submission of reports.

To comply with the Tri-Council Policy Statement, you must also submit a final report upon completion of your project. All report forms can be found on the Research Ethics web page at
http://www.brocku.ca/research/policies-and-forms/research-forms.

In addition, throughout your research, you must report promptly to the REB:

a) Changes increasing the risk to the participant(s) and/or affecting significantly the conduct of the study;
b) All adverse and/or unanticipated experiences or events that may have real or potential unfavourable implications for participants;
c) New information that may adversely affect the safety of the participants or the conduct of the study;
d) Any changes in your source of funding or new funding to a previously unfunded project.

We wish you success with your research.

Approved:

Jan Frijters, Chair
Social Sciences Research Ethics Board

Note: Brock University is accountable for the research carried out in its own jurisdiction or under its auspices and may refuse certain research even though the REB has found it ethically acceptable.

If research participants are in the care of a health facility, at a school, or other institution or community organization, it is the responsibility of the Principal Investigator to ensure that the ethical guidelines and clearance of those facilities or institutions are obtained and filed with the REB prior to the initiation of research at that site.