EFFECTS OF A MOTIVATIONAL CLIMATE INTERVENTION IN GROUP EXERCISE ON PARTICIPANTS’ MOTIVATIONAL AND OTHER PSYCHOLOGICAL RESPONSES

By

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The purpose of this research was to examine the experiences of physically inactive female college students ($N = 20$) randomly placed in an intentionally created C/TI (caring/task-involving) or EI (ego-involving) climate for small group weight training sessions. Participants’ perceptions of the motivational climate were considered with regard to their interest/enjoyment, effort, feelings of stress, shame, and self-consciousness, as well as planned continuation of weight training and excitement to do so. Results indicated that the intervention to create the intended climates was successful. Further, participants in the C/TI group reported significantly greater enjoyment during the weight-training session and experienced less feeling of stress, shame, and self-consciousness than those in the EI climate. Additionally, those in the C/TI group reported greater excitement to participate in future weight training than participants in the EI group. There were no significant differences in self-reported effort levels or plans to continue weight-training between the climate groups, though the trend was for those in the C/TI climate to report greater effort levels and plans to continue weight training more than the EI group. The results of this research suggest participants in exercise settings are capable of perceiving differing motivational climates, which can affect their experiences and commitment to future physical activity.
Table of Contents

Introduction ........................................................................................................................................ 1

Method .............................................................................................................................................. 7

Participants ....................................................................................................................................... 7

Assessments and Measures ............................................................................................................ 7

Pre and post session questionnaires ............................................................................................... 8

Effort ................................................................................................................................................ 8

Enjoyment ......................................................................................................................................... 8

Post-session only questionnaires .................................................................................................. 8

Caring Climate ................................................................................................................................. 8

Perceived Motivational Climate ....................................................................................................... 8

Additional Items ............................................................................................................................... 9

Procedure .......................................................................................................................................... 9

Instructor / Confederate Training ..................................................................................................... 10

Caring/task-involving climate intervention .................................................................................... 10

Ego-involving climate intervention ................................................................................................ 11

Results ........................................................................................................................................... 11

Psychological Variables for Pre and Post Exercise Session ......................................................... 12

Post Variables Only ......................................................................................................................... 12

Discussion ...................................................................................................................................... 13

References ...................................................................................................................................... 22
Introduction

Exercise related research grounded in tenets of Achievement Goal Perspective Theory (AGPT; Nicholls, 1984, 1989) and a caring framework (Newton et al., 2007a) has indicated psychological and behavioral benefits experienced by those in physical activity settings characterized by a caring (C) can task-involving (TI) climate. Various trends have been found in exercise motivational climate research including participants’ self-reported effort levels in C/TI climates have been higher than in perceived ego-involving (EI) climates (Hogue, Fry, Fry, & Pressman, 2013; Liukkonen, Barkoukis, Watt, & Jakola, 2010). Additionally, exercise participants also seem to enjoy the experience of being physically active more so in C/TI climates than in EI climates and report more commitment to an exercise program (Huddleston, Fry, & Brown, 2012). Much of the exercise psychology research related to AGPT has been survey based to examine participant perceptions of climates in already intact settings, or in interventions to help fitness personnel create a more positive environment to investigate responses (Brown, Fry, & Little, 2013). To date, researchers have only been able to find evidence of one study intentionally creating a C/TI and EI climate in a physical activity setting to examine differences in participants’ experiences in each setting (Lloyd & Fox, 1992). The purpose of this research was to examine the experiences of physically inactive female college students that were randomly placed in an intentionally created C/TI or EI climate for small group weight training sessions. Participants’ perceptions of the motivational climate were considered with regard to their interest/enjoyment, effort, feelings of stress, shame, and self-consciousness, as well as planned continuation of weight training and excitement to do so.
Recent research on motivational climate in exercise has been grounded in Nicholls, (1984, 1989) Achievement Goal Perspective Theory. According to Nicholls, in achievement settings, individuals can either focus on their personal effort and ability (i.e., be task-involved) or their performance in comparison to others (i.e., be ego-involved). AGPT identifies important factors such as how the situational environment can impact individuals’ personal definitions of success as well as their cognitive, affective and behavioral responses in achievement settings. With regard to the climate, Nicholls maintains that individuals can perceive a more task- or ego-involving climate in achievement domains (1989).

In a task-involving motivational climate, individuals perceive the focus to be on members’ mastery of skills as well as their individual effort and improvement. In comparison, in an ego-involving (EI) climate, the perceived focus is on competition and normative comparison. Additionally, in an EI climate, ability is rewarded, mistakes are punished, and recognition is given to those who perform better than others. Essentially, participants in an EI climate are encouraged to judge their success by how well they do compared to others, whereas in a TI climate, individuals are influenced to judge their success based on their personal effort and improvement, regardless of others’ performance. Nicholls (1989) suggested individuals who are ego-involved view achievement as a means to an end, to exhibit higher ability than others. Thus, a motivational climate that emphasizes achievement based on more process variables, such as personal effort and mastery, is expected to be associated with higher levels of intrinsic motivation and effort.

Research on motivational climate in exercise has also begun to measure how a
perceived caring climate can improve participants’ experiences in exercise. The Caring Climate Scale in physical activity (CCS; Newton et al., 2007a) was established to examine perceptions of a setting to be inviting, safe, support, and feeling valued and respected. Developers of the scale were influenced by educational philosopher Noddings (1984), whose writings call for more attention to be given to creating a caring climate in educational settings. Noddings believed through listening, accepting, sympathizing, and helping people in an educational environment, individuals would develop a passion for learning. These assumptions have carried over to the realm of exercise environments, as recent research in exercise psychology has provided support for the theoretical tenets of AGPT and the caring framework (Brown et al., 2013; Huddleston et al., 2012).

Maximizing effort levels within reason during physical activity is also important so participants might learn the value of high effort in order to master a new skill and experience exercise related benefits. The Intrinsic Motivation Inventory (IMI) (McAuley, Duncan, & Tammin, 1989) has been used to examine the relationship between motivational climate and intrinsic motivation levels. The IMI is comprised of four sub-scales, one being effort-importance (e.g., I put a lot of effort into this activity). This sub-scale has been used in relation to exercise to examine relationships between motivational climate and effort. Huddleston et al. (2012) found a significant and positive correlation between a perceived TI climate and the effort/importance subscale of the IMI. These findings were mirrored by the research of Hogue et al. (2013) who found a C/TI climate was positively correlated with self-reported higher levels of effort on the IMI subscale of effort/importance when participants were learning a new task (juggling).

Among female college students in aerobics classes, perceptions of a high C/TI and low EI
climate was positively related to higher effort/importance scores on the IMI subscale (Brown & Fry, 2013). In addition, TI climate in physical education classes has also been correlated with higher self-reported effort levels than an EI climate (Liukkonen, Barkoukis, Watt, & Jakola, 2010). Solomon’s (1996) research correlated a TI motivational climate with higher observed effort levels of participants. She coded practice trials and amount of practice at varying difficulty levels of participants learning to juggle in TI and EI climates was examined. Those participants placed in the TI climate exhibited significantly higher levels of persistence at difficult levels of practice. Though Hogue et al. (2013) did not objectively measure effort, the research team members noted that all instructors and confederates involved in their study creating C/TI and EI climates for participants learning to juggle unanimously agreed participants in the EI climate exhibited less effort and made less progress when learning to juggle.

Also worthy of noting is the relationship between motivational climates in physical activity and enjoyment of exercise. Various measures of exercise enjoyment have been used in literature including the interest/enjoyment subscale of the IMI (McAuley et al., 1989) as well as the Sport Satisfaction and Enjoyment Scale (Duda & Nicholls, 1992). Huddleston et al. (2012) found a perceived TI climate by members of a corporate fitness facility was positively related to interest/enjoyment in exercise by those who used the facility. Similarly, perceptions of a C/TI motivational climate have been shown to be correlated with interest/enjoyment among female participants in college aerobics classes, and enjoyment as a reason to engage in physical activity (Brown & Fry, 2013). Lifelong participation in regular exercise can mean constantly learning new skills related to different forms of physical activity. When examining factors which may lead to
enjoyment of learning a new skill, it is important to note the influence of motivational climate. Hogue et al. (2013) found participants in an intervention assigned to a C/TI group when learning to juggle reported greater enjoyment than those assigned to learn to juggle in EI climate. This has also been shown in research by Lloyd and Fox (1992) who found youth female participants in a physical education programs assigned to a TI climate enjoyed their classes more than those placed in an EI climate class.

An additional benefit of creating a C/TI motivational climate in a physical activity is increased levels of commitment/expected future participation and excitement to continue exercising. This has been revealed in research with caring and task-involving climates measured with one or both climates together. One example occurred with a caring based physical activity intervention with adolescents. Participants reported higher levels of future expected participation in the caring focused group (Newton et al., 2007b). Additionally, female adolescents placed in a TI climate for an aerobic fitness program reported more motivation to continue physical activity than EI climate participants.

Perceptions of a C/TI climate have also been positively and significantly correlated with commitment to exercise (Brown & Fry 2014). Hogue et al. (2013), in an intervention to teach people how to juggle in a C/TI or EI motivational climate, found those in the C/TI climate reported greater interest and excitement to continue juggling than those in the EI climate. These findings are directly applicable in exercise settings, where often participants are learning new techniques and skills related to physical activity.

Research also seems to suggest another benefit of a C/TI climate in exercise settings is to lessen the experiences of negative psychological states. In one instance, researchers examining perceptions of a TI and EI climate among users of a student fitness
center found positive mood states (i.e. calm, vigor, and well-being) were positively related to a TI climate whereas the negative mood constructs measured (i.e. depressed, anxiety, and fearful) were positively associated with an EI climate regardless of gender (Brown et al., 2013). Similar research among underserved youth in a sport camp found perceptions of a caring climate was positively associated with feelings of hope and happiness and negatively related to depression and sadness Fry et al., 2012). For the purpose of this research, feelings of stress, shame and self-consciousness in relation to motivational climate were examined. Past research measuring these same psychological responses found all variables significantly negatively related to a C/TI and positively related to an EI climate (Hogue et al., 2013).

Creating a C/TI motivational climate for participants in physical activity seems to be advantageous on a multitude of fronts. Perceptions of a C/TI climate, as suggested by previous research, may lead participants to enjoy exercise more and give more effort in the process. Additionally, if adherence to physical activity is one of the goals of fitness professionals, gym managers, or public health officials then it is worthy to note the evidence suggesting how specifically a C/TI motivational climate can positively influence commitment to exercise and excitement to remain active. It is equally important to emphasize how C/TI may lead to the experience of more positive mood states in physical activity while an EI climate may do the exact opposite. The purpose of this research was to examine the effects of a motivational climate intervention among female college students in a group weight training session on participants’ motivational responses, particularly their interest/enjoyment, effort, feelings of stress, shame, and self-consciousness, as well as their plan to continue weight training and excitement to
continue. Specifically those in a C/TI group climate were expected to report higher effort
and enjoyment levels during the training session and lower stress, shame and self-
consciousness after the session than participants in the EI group. Additionally,
participants in the C/TI climate group were predicted to have greater intention and
excitement to continue weight training in the future than the EI group members.

Method

Participants

Female college students (N=20, age range: 18-25) volunteered to participate in a
small group weight training session and received 20 dollars for their participation. They
were randomly assigned to one of two experimental groups that had distinct motivational
environments: a) a caring/task-involving climate or b) an ego-involving climate.
Participants were required to be physically inactive, have not followed any regular
exercise routine with more than two days of targeted physical activity per week over the
past year. All participants were required to fill out a health history questionnaire to
confirm they would not be putting themselves at any obvious risk by participating in the
session. The Institutional Review Board at the University of Kansas approved the study
(see Appendix A), and participants provided their informed consent.

Assessments and Measures

Each questionnaire utilized a 5-point Likert type response format for all questions
with 1 (strongly disagree) to 5 (strongly agree). Mean scores on each measure were
calculated to assess levels of perceived effort, enjoyment, the 5-additional items (stress,
shame, self-consciousness, planned continuation, and excitement to continue weight
training) and motivational climate (C/TI or EI).
Pre and post session questionnaires

**Effort.** Participants’ effort levels were measured using the five-item effort subscale of the Intrinsic Motivation Inventory (IMI: McAuley, Duncan & Tammen, 1989) both before and after the group personal training session (note specific question). Perceptions of participants’ usual effort in physical activity settings (pre) and their effort given during the weight training session (post) were examined. A sample item is, “I put a lot of effort into this training session.” Both reliability and validity for the IMI has been established (McAuley et al., 1989).

**Enjoyment.** The enjoyment levels of participants were measured using the five-item Sports Satisfaction and Enjoyment Scale (Duda & Nichols, 1992). Perceptions of participants’ enjoyment in learning new skills (pre) and their enjoyment of learning about weight training in the group training session (post) were examined. A sample item used is, “I found the training session interesting.” Reliability and validity has been demonstrated with the enjoyment scale (Duda & Nichols, 1992).

Post-session only questionnaires

**Caring Climate.** The 13-item CCS was used to assess participants’ perceptions of how inviting, respectful, supportive, and accepting the climate was during the personal training session. One sample item of the scale is “In this session, I felt liked for who I am.” The CCS has demonstrated strong psychometric properties (Gano-Overway et al., 2009; Newton et al., 2007a).

**Perceived Motivational Climate.** The 27-item Perceived Motivational Climate in Exercise Questionnaire (Huddleston et al., 2012) was used to assess participants’ perceptions of the extent that they viewed the climate to be tasking-involving versus ego-
involving during their group training session. An example of an item used for each scale is “In this training session, participants were made to feel valued” (task-involving) and “In this training session, students felt embarrassed if they did not know how to use the equipment or perform the exercise” (ego-involving). Huddleston et al. (2012) reported support for the factor structure of the PMCEQ and internal consistency for the task-involving and ego-involving scales at .88 and .86, respectively.)

Additional Items. Five additional, single items were used for the purpose of this study. These items were created by Hogue et al. (2013) for a previous study. They are “This training session was stressful; At times, I felt shame during the training session; I felt self-conscious during the training session; I plan on continuing to practice weight training; and I am excited to continue weight training.”

Procedure

Before the intervention participants were randomized to participate in either a C/TI climate or EI climate when learning proper weight training techniques. Participants were told the purpose of the research was to examine their feelings beforehand and following participation in a group weight training session. Before the session participants were asked to fill out a survey to ascertain how much they usually enjoy physical activity and how much effort they usually put into physical activity. Each session had an instructor and two confederates helping to create a C/TI involving or EI motivational climate for the one true research participant in each session. The instructor and confederates worked together to maximize aspects of the different climates within each training session.

During the session participants learned proper technique for the dumb bell bench
press, standing dumb bell bicep curl, and seated overhead dumb bell press. Each participant completed three sets of each exercise staying within the range of 10-15 repetitions. The emphasis was on learning to use proper technique, rather than actual weight lifted. All participants completed their weight training sets using 5 pound dumb bells.

Following the session participants were asked to fill out surveys related to perceived motivational climate, enjoyment, effort, and the 5 additional items. Once they completed the questionnaire, participants were debriefed and given a more thorough description of the research and explained that they were randomly placed in a specific motivational climate. Those participants randomized to the EI climate were invited to return for another exercise session in a more positive C/TI motivational climate.

**Instructor / Confederate Training**

The instructor and confederates attended training sessions that provided information on the theoretical framework of the study and literature relating to C/TI and EI motivational climates in physical activity. Further, the instructor and confederates practiced creating the intended climate within the intervention.

**Caring/task-involving climate intervention**

The C/TI session began with an introduction followed by an icebreaker to encourage participants get to know each other. Participants played two truths and a lie. Each told the participants in the group two truths and a lie about themselves and everyone had to guess which were the truths and which was the lie. Afterwards, the weight training session began. During the intervention participants were taught the correct form for three exercises. The instructor gave technical instruction for each participant. Each
participant was given the opportunity to complete the three sets of each exercise in order to have a chance to improve and learn. Instructors and confederates encouraged high effort and recognized the effort and improvement of the participants. Confederates made sure to be encouraging of each other as well as the true participant. Instructors were also sure to call participants by their name and ask if they had any questions to help create the caring aspect of the climate.

**Ego-involving climate intervention**

The EI climate began with an introduction and discussion about which participant did the best in the baseline muscle force testing. For an icebreaker, participants shared their greatest sport accomplishment. The instructor gave one confederate more praise and attention than the others, as is typical in an ego-involving climate. Next, instruction was given on how the competition aspect of the session would take place. Participants were scored on how well they were able to execute good form after three sets of each exercise. During the weight training session the instructor made sure to give the most attention to the participants who demonstrated the best form. The Instructor also appeared frustrated when participants made mistakes and were complimentary of those who did not. At the end of the intervention scores were tallied and a winner was recognized for his/her ability to best execute correct form. (See Table 1)

**Results**

The means and standard deviations for each of the scales by climate group (i.e., C/TI and EI) is presented in Table 2. Cronbach’s alpha reliability coefficients were calculated for each of the climate scales as well as effort and enjoyment scales, all of which had adequate values (> .80).
Motivational Climate Manipulation

To determine whether the climate manipulation was successful, a MANOVA (C/TI and EI groups) was conducted to examine participants’ scores on the climate scales. Results revealed the climate intervention was successful. Specifically the C/TI participants reported significantly higher caring and task-involving scale scores than did the EI group (Caring: $F(1, 18 = 255.58, p < .001$, partial $\eta^2 = .93$; Task: $F(1, 18 = 97.43, p < .001$, partial $\eta^2 = .84$). In contrast, the EI group reported significantly higher ego-involving scale scores than did the C/TI group $F(1, 18 = 92.15, p < .001$, partial $\eta^2 = .84$.

Psychological Variables for Pre and Post Exercise Session

A 2(Climate: C/TI and EI) x 2 (Time: pre exercise session vs. post exercise session) MANOVA was conducted to determine whether effort and enjoyment varied for the participant. Results revealed a significant interaction for Climate x Time, $F(1, 36) = 26.17, p < .001$, partial $\eta^2 = .42$, for enjoyment but not for effort (See Figure 1 and 2). In summary, participants in the C/TI climate group reported significantly higher enjoyment in the weight training session than did the EI group. It is noteworthy that the effort results, $F(1, 36) = 1.84, p = .18$, partial $\eta^2 = .05$ while not significant, showed a trend with the C/TI climate group reporting increased effort from pre to post intervention, while effort remained constant for the EI group.

Post Variables Only

Two separate MANOVAS were conducted to examine whether the climate groups differed on the five post-only variables (See Figure 3). The first MANOVA examined whether the participants varied in their plan and excitement to continue to weight train in the future based on their climate group assignment. Results revealed that participants in
the C/TI climate group reported significantly greater excitement to continue weight training in the future than did the EI climate group, $F(1, 18) = 5.83, p \leq .05$, partial $\eta^2 = .25$. Though there was no significant difference between the climate groups on their plan to continue weight training the trend again was for the C/TI group to report higher scores than the EI group.

A second MANOVA was conducted to examine whether the climate groups differed in their feelings of stress, shame, and self-consciousness at the end of the weight training session. Results revealed that the EI group participants reported significantly higher stress $F(1, 18) = 9.53, p \leq .01$, partial $\eta^2 = .35$; shame, $F(1, 18) = 54.32, p \leq .001$, partial $\eta^2 = .75$; and self-consciousness $F(1, 18) = 34.09, p \leq .001$, partial $\eta^2 = .65$, than did the C/TI group participants.

**Discussion**

This research involved an intervention to intentionally create C/TI and EI motivational climates among college aged females in group weight training sessions in order to examine the participants motivational and psychological responses. The climate manipulation was successful with participants in the C/TI group reporting significantly higher caring and task-involving scores than the EI group and the EI group reporting significantly higher ego-involving scale scores. This is important as it gives further evidence to support that it is possible to intentionally create specific motivational climates in a physical activity settings that are perceived by the participants in a brief period (i.e. thirty minutes). The findings are in line with Nicholls (1989) who argued individuals can perceive a more TI or EI climate in achievement domains. Furthermore,
Nicholls maintained a climate with emphasis on TI features would lead to more positive responses, as is supported by this research.

Before the climate intervention, participants did not differ significantly on their enjoyment of physical activity although after the intervention results revealed a significant difference in reported enjoyment of the weight training session. Those participants randomized to a C/TI, as hypothesized, enjoyed the session more than those in the EI climate. These findings are in line with various motivational climate research including results relating to sport (Newton, Duda, & Yin, 2000), physical education (Lloyd & Fox, 1992) and aerobics classes (Brown & Fry, 2013), and users of corporate fitness centers (Huddleston et al., 2012). Also worthy of mention is the relationship between enjoyment of physical activity and subsequent commitment. Previous research among women in college aerobics classes suggest, not surprisingly, enjoyment as a reason to engage in physical activity and as being associated with commitment to exercise (Brown & Fry, 2013). Even in a short thirty-minute session the mean post session enjoyment scores in this research for the C/TI group was over two points higher on a five-point scale than those in the EI group (i.e. 4.6 vs. 2.4, respectively). Exercise enjoyment is likely a critical factor leading to adherence. People may be more apt to make time in their busy schedules for something like physical activity if they find their experience enjoyable.

Though there was a strong difference in enjoyment reported among the climate groups this was not the case with regard to effort. Prior to the exercise session both climate groups reported they exert moderately high effort when engaging in physical activity, and there was no significant difference in effort scores between the climate
groups. It was expected, however, that self-reported effort scores would vary significantly among the climate groups after the exercise session, as prior research has consistently revealed that participants who perceive C/TI climates self-report exerting greater effort than those who perceive EI climates (Cecchini et al., 2001; Hogue et al., 2013; Newton et al., 2000). Alternatively, results from this study found no significant difference post session between the climate groups. There was a non-significant trend worth noting, with scores on the effort/importance scale remaining consistent for those in the EI climate from pre to post session (i.e., 3.7), but increasing with C/TI climate participants (i.e., 3.8 to 4.4). In previous research with larger sample sizes participants withdrawal of effort was likely less noticeable (e.g., the teacher-student ratio was 1-15+ in contrast to the current study where the ratio was 1-3). Given the small group nature of the weight training session in this study, withdrawing effort would have been extremely noticeable in a three person training session, and may not have been a viable option for participants. Though the women in the EI weight training sessions were experiencing psychological distress as suggested by results, withdrawing effort would have increased criticism and judgment from the instructor and confederates in the climate. The participants in the EI climate may have felt they needed to continue to give adequate effort through the session, even though they were experiencing stress and not enjoying the experience. It is not likely that participants in this situation would look forward to future exercise sessions and give high effort when not in a supervised session, particularly if they were not experienced exercisers. Though not significant, the participants in the C/TI climate increased their effort from pre to post session over a half point, which suggests the climate potentially played an important role or might over time if they continued to
experience a positive and supportive environment. It should be the goal of fitness instructors to increase effort in conjunction with positive psychological responses during exercise.

Following the intervention, there was no significance different between the climate groups relating to their planned continuation of weight training but there was a trend for the C/TI group to report higher scores on the item related to planned continuation. The criteria to participate in this study required participants had not engaged in regular physical activity over the past year (i.e., more than twice a week).

The transtheoretical model of behavior change has been used in exercise behavior research and may be worthy of addressing in relation to these findings (Prochaska and Marcus, 1994). The theory posits people go through various stages of change when beginning to adapt a new behavior. Though female participants in this research were not currently regularly engaging in physical activity, they might have been considering a change given their interest in participating in a weight training session. Many of the participants may have likely fallen into the stage of contemplation (considering beginning to engage in weight training) or preparation (preparing to begin regularly weight training). Given their possible stage of change not firmly established as regular exercisers, it may have been that a 30-minute session was not enough to strongly affect whether the women planned to continue weight training. The difference in scores, though not significant, might have been if the sample size was larger (i.e., C/TI group was 3.7 vs. the EI group score of 3.0).

While there was no significant difference between the climate groups plan to continue a weight training program, there was a significant difference in the groups’
excitement to continue a weight training program. Specifically, the C/TI group reported significantly greater excitement to continue weight training than those in the EI climate. While these variables (i.e., intent to continue weight training and excitement to continue weight training) seem very similar, results revealed different responses between the groups. Because females in this research were likely somewhat interested in weight training though not regularly engaging in it, the climate alone may not have strongly affected their interest and plan to continue to engage in physical activity. However, clearly being part of the C/TI climate was key for helping participants become excited to continue the journey to engage in regular physical activity or dampen excitement, as was the case for the E/I group. If the goal of health professionals is to increase physical activity then excitement related to participation is a possible advantageous result of creating a C/TI climate.

In addition to the more positive benefits associated with the session for the C/TI group, motivational climate also had a significant effect on participants’ feelings of stress, shame and self-consciousness during the weight-training session. Those in the EI climate reported significantly higher levels of each of the three negative mood states. These findings are as hypothesized and in line with previous research examining the same items (Hogue et al., 2013). Researchers have intentionally created a C/TI and EI climate teaching people to juggle in order to examine participant responses, and they found individuals in the EI climate reported greater stress, shame, self-consciousness (Hogue et al. 2013), and frustration with poor normative performances (Solomon, 1996). Experiencing these emotions in a physical activity setting is distracting from being able to focus on the task at hand and may help explain why a C/TI climate is helpful for
optimizing motivation. Further Hogue et al. (2013) found there was not only increased self-reported psychological stress, but also a physiological response via increased levels of the stress response hormone cortisol. Interestingly, women in the C/TI weight training session reported very low levels of stress, shame, and self-consciousness even though they were non-exercisers participating in a research study. Hogue et al. (2013) suggested that a C/NI can have a buffering effect on participants stress levels in physical activity settings. Findings reveal that the exercise instructor’s motivation style is important and can have a definite impact on how people respond to their physical activity environment. Because this research supports the notion that aspects of specifics climates can be created and perceived by participants, it is important to understand what type of motivation exercise participants prefer. This question was specifically explored by Harju, Twiddy, Cope, Eppler, and McCammon (2003) who found women exercisers preferred instructor styles emphasizing mastery as opposed to performance in relation to others, a tenant of a task-involving climate. Results from this research outline just how important it is for health professionals to intentionally work to create positive motivational climates in physical activity settings in order for participants to have a better experience with exercise.

One notable limitation of this research is the small sample size. Intervention research is time intensive and it was feasible to include 20 subjects (10 for each climate). The sample size was adequate to create the distinct motivational climates, but a larger sample size would have been advantageous in terms of examining the participant’s motivational responses. In several cases the results approached significance, but with a larger sample size notable trends in responses to psychological variable scales may have
led to more statistically significant findings. In addition, the weight training session only lasted 30 minutes. Though results suggest this was enough for participants to experience the intended climate created and lead to a differences in responses, an intervention that lasted longer may have led to even more pronounced scores on the various scales used for this research. It would be interesting, for example, to have the women participate in several sessions over the period of a week. Another limitation of this research is that only females were included in the participant sample. Although tenants of AGPT do not predict gender differences (Nicholls, 1989), and previous research relating to examination of C/TI and EI climates on participant experiences did not find any main effect in relation to sex (Hogue et al., 2013) future research should attempt to include males as well as females.

There are many interesting routes for future motivational climate in exercise research could take to further evidence for the benefits of creating a C/TI for exercise participants. It is interesting to that both the instructor and confederates noted they experienced personal increased stress when carrying out the EI climate with research participants. They also noted that they did not sleep as well during this dating collection and felt more irritable. They indicated that their mood was enhanced when engaged in the C/TI sessions and the enthusiasm with the subjects seemed to be contagious for the group. After one session the instructor and confederates described how enjoyable it was to have the participant excited in the C/TI session and initiate giving “high fives” to the group. The instructor and confederates emphasized that such behavior was not present in the EI group session.
Noddings (1984) has described how caring interactions can require high energy and effort because individuals must be engaged in genuine listening and intent on the needs of the individual receiving the caring. However, this research suggests that creating an EI climate in exercise could have stressful effects for both the participants as well as the instructor. Future research might consider these issues more closely. There has not been much research examining psychological well-being of fitness instructors and sport coaches who create motivational climates for participants. Future research might explore how instructional styles (C/TI or EI) relate to psychological well-being parameters of those creating the climate.

Research relating to motivational climate and effort in physical activity using somewhat objective measures as opposed to self-report measures within existing research is lacking, and future research might employ a more objective method to assess effort. Solomon (1996) used an objective measure of persistence of students in a physical education setting when learning a difficult task. She videotaped the students juggling and qualitatively observed that students in the TI groups engaged in more difficult trials and demonstrated greater persistence than students in the EI groups. Future research using more objective measures in sport or fitness facilities might reveal similar results as Solomon who found that participants in a task-involving condition exhibited more persistence in practicing a task at a difficult level. In the current study, it was more difficult to observe effort in the exercise session because it was brief and the emphasis was on teaching correct technique. Effort would be more evident over time as it could be observed whether participants are striving to increase their weights on exercises, complete all sets/ repetitions, exercise regularly, attend sessions, etc.
Another useful direction for future research involving motivational climates and physical activity might include building off the study by Hogue et al. (2013) examining a physiological change associated with motivational climate. While cortisol can have detrimental effects both on the physical and mental level, there may be other things going on physiologically in motivational climates that are important to study such as inflammatory cytokines. High stress has been shown to disrupt the balance of pro and anti-inflammatory cytokines in humans (Maes et al., 1998) that has been linked with fatigue, depressed mood, difficulty maintaining attention, and difficulty in sleep (Suzuki et al., 2000). As ego-involving motivational climates have been correlated with higher stress and anxiety levels, it may be that this leads to harmful consequences on a physiological level as well, so future research will be important to consider these relationships.

In conclusion, results from this study provide a foundation to continue research in exercise psychology on the benefits of creating a C/TI climate. This specific research targeted female college students. The college years now may be more critical than ever to promote physical activity as Chomitz et al. (2012) suggests with decreased physical education classes in grades K-12, the responsibility to engage young adults in physical activity may now be placed more so on college and universities. If college students do not learn to make physical activity part of their regular schedule, it is not likely to happen as they progress in life and have possible full time jobs and greater family responsibilities.

As habits developed at a younger age tend to continue over time (Barnekow-Bergkvist, Hedberg, Janlert, & Jansson, 1996)/ Creating C/TI climates may prove to be an
important aspect of encouraging college students to adopt healthy active lifestyles that they continue into their adult years.

References


Table 1

Motivational Climate Manipulation

<table>
<thead>
<tr>
<th>Caring/Task Involving</th>
<th>Ego Involving</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Introduction</strong></td>
<td><strong>Introduction</strong></td>
</tr>
<tr>
<td>Thank participants for their interest/participation and introduce the three lifts</td>
<td>Thank participants for their interest/participation and introduce the three lifts</td>
</tr>
<tr>
<td>they will be learning. Emphasize this is a learning session and the goal is to help</td>
<td>they will be learning. Let them know that this will be a competition and each person will be given a score on their form for each lift.</td>
</tr>
<tr>
<td>develop good technique, give high effort, have fun, and support one another.</td>
<td></td>
</tr>
<tr>
<td><strong>Icebreaker</strong></td>
<td><strong>Icebreaker</strong></td>
</tr>
<tr>
<td>Two Truths and A Lie: Participants each told the group two truths and a lie about</td>
<td>Glory Days: Group members took turns introducing themselves and talking about</td>
</tr>
<tr>
<td>themselves and everyone had to guess which were the truths and which was a lie.</td>
<td>their greatest sport accomplishment.</td>
</tr>
<tr>
<td><strong>Weight Training Activities:</strong></td>
<td><strong>Weight Training Activities:</strong></td>
</tr>
<tr>
<td>Press</td>
<td>Press</td>
</tr>
<tr>
<td>Participants were given technical instruction; their high effort and improvement</td>
<td>Participants were rated on their form for each exercise and scores were displayed on</td>
</tr>
<tr>
<td>were noted. Competition was not emphasized and confederates were supportive of each</td>
<td>a white board. Competition was emphasized and the participant with the best form was given the most</td>
</tr>
<tr>
<td>other and the true participant. First names were used often and the instructor treated</td>
<td>attention/praise. In addition, mistakes were punished with frustrating and negative</td>
</tr>
<tr>
<td>each participant</td>
<td></td>
</tr>
</tbody>
</table>
with kindness and respect. comments from the instructor.

Table 2

Means, Standard Deviations, and Cronbach’s alpha levels of Pre and Post Exercise Session Enjoyment, and Effort and Motivational Climate with Additional Five Items Post Session

<table>
<thead>
<tr>
<th>MOTIVATIONAL CLIMATE</th>
<th>Caring/Task Group</th>
<th>Ego Group</th>
<th>Cronbach’s alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caring *</td>
<td>4.91 (.14)</td>
<td>1.85 (.58)</td>
<td>.99</td>
</tr>
<tr>
<td>Task *</td>
<td>4.69 (.34)</td>
<td>2.5 (.61)</td>
<td>.97</td>
</tr>
<tr>
<td>Ego *</td>
<td>1.54 (.74)</td>
<td>3.98 (.31)</td>
<td>.95</td>
</tr>
</tbody>
</table>

Post Session Variables

<table>
<thead>
<tr>
<th></th>
<th>Means (SD)</th>
<th>Means (SD)</th>
<th>Cronbach’s alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stress *</td>
<td>1.7 (1.25)</td>
<td>3.5 (1.35)</td>
<td></td>
</tr>
<tr>
<td>Shame *</td>
<td>1.2 (.42)</td>
<td>3.8 (1.03)</td>
<td></td>
</tr>
<tr>
<td>Self-Consciousness *</td>
<td>1.5 (.97)</td>
<td>4 (.94)</td>
<td></td>
</tr>
<tr>
<td>Plan To Continue</td>
<td>3.7 (1.41)</td>
<td>3 (.67)</td>
<td></td>
</tr>
<tr>
<td>Weigh-Training</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Excitement To Continue</td>
<td>3.8 (1.47)</td>
<td>2.5 (.85)</td>
<td></td>
</tr>
<tr>
<td>Plan To Continue</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. * p < .01; **p < .05
Figure 1

*Participant Self-Reported Enjoyment Pre and Post Exercise Session*

<table>
<thead>
<tr>
<th></th>
<th>Pre session</th>
<th>Post session</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENJOYMENT-C/TI</td>
<td>3.74</td>
<td>4.58</td>
</tr>
<tr>
<td>ENJOYMENT-EI</td>
<td>3.38</td>
<td>2.36</td>
</tr>
</tbody>
</table>

*p < .01.*
Figure 2

Participants Self-Reported Effort Pre and Post Exercise Session
Figure 3

*Additional Five Items – Post Session*

<table>
<thead>
<tr>
<th>Stress *</th>
<th>Shame *</th>
<th>Self-Consciousness *</th>
<th>Plan to Continue</th>
<th>Excitement to Continue **</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.50</td>
<td>1.70</td>
<td>4.00</td>
<td>3.00</td>
<td>2.50</td>
</tr>
<tr>
<td>3.80</td>
<td>1.20</td>
<td>1.50</td>
<td>3.70</td>
<td>3.80</td>
</tr>
</tbody>
</table>

*p < .01; **p < .05.* (indicates significant difference between climate groups)
APPENDIX A

IRB APPROVAL
APPROVAL OF PROTOCOL

March 27, 2014

Daniel Rosen Jr
d569r830@ku.edu

Dear Daniel Rosen Jr:

On 3/27/2014, the IRB reviewed the following submission:

<table>
<thead>
<tr>
<th>Type of Review:</th>
<th>Initial Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Title of Study:</td>
<td>An Intervention to Examine the Relationship Between Motivational Climate in a Group Personal Training Session and Voluntary Effort Levels Assed by Neuromuscular Measurements.</td>
</tr>
<tr>
<td>Investigator:</td>
<td>Daniel Rosen Jr</td>
</tr>
<tr>
<td>IRB ID:</td>
<td>STUDY00000772</td>
</tr>
<tr>
<td>Funding:</td>
<td>None</td>
</tr>
<tr>
<td>Grant ID:</td>
<td>None</td>
</tr>
</tbody>
</table>

The IRB approved the study from 3/27/2014 to 3/5/2015.

1. Before 3/5/2015 submit a Continuing Review request and required attachments to request continuing approval or closure.
2. Any significant change to the protocol requires a modification approval prior to altering the project.
3. Notify HSCL about any new investigators not named in original application. Note that new investigators must take the online tutorial at https://rgs.drupal.ku.edu/human_subjects_compliance_training.
4. Any injury to a subject because of the research procedure must be reported immediately.
5. When signed consent documents are required, the primary investigator must retain the signed consent documents for at least three years past completion of the research activity.

If continuing review approval is not granted before the expiration date of 3/5/2015 approval of this protocol expires on that date.

Please note university data security and handling requirements for your project: https://documents.ku.edu/policies/IT/DataClassificationandHandlingProceduresGuide.htm

You must use the final, watermarked version of the consent form, available under the "Documents" tab in eCompliance.

Sincerely,

Stephanie Dyson Elms, MPA
IRB Administrator, KU Lawrence Campus
APPENDIX B

EXTENDED LITERATURE REVIEW
Extended Literature Review

Achievement Motivation

Findings proclaiming many of the psychological benefits of physical activity are of no surprise to many, since researchers across the globe have now spent decades studying the effects of exercise on anxiety, stress, depression, and more. Another aspect of the literature, not as frequently discussed, is how the motivational climate of physical activity settings might mediate those effects not only on psychological well-being, but also physiological health, intrinsic motivation, and effort. The basis for some of this blossoming research comes from the research by John Nicholls (1984, 1989) on achievement motivation. Nicholls focused on how conceptions of ability effect how individuals approach a task. He postulated young children see ability in reference to themselves and high performance is achieved with effort. For children, having low ability occurs when individuals give low effort on a task. Young children do not judge their ability based on whether others can perform the same task. This mindset of seeing ability only in reference to the self, Nicholls calls task-involvement. In this state, people are focused on mastery of a skill and improvement overtime with a less external perspective of self. As children age, Nicholls argues, levels of differentiation begin to appear in adolescence in which people can conceive of ability as capacity. That is, ability no longer is judged solely on individual effort and improvement but rather capacity relative to others. When individuals develop a differentiated conception of ability they only feel successful when they outperform others or perform equally to others with less effort. Nicholls calls this concern with performance in relation to others an ego-involved state. Around the age children obtain the capacity to employ a differentiated conception
of ability they can choose to define success based on personal effort and improvement (task-involving) and/or their performance in comparison to others (ego-involving). These personal definitions of success are referred to as goal orientations. Those who are task involved exhibit high effort to achieve mastery. They are not concerned with performance in relation to others but only in achieving personal bests. Task-involved individuals view effort as leading to mastery and higher ability. Ego involved individuals are most concerned with mastery as a way to serve their ends; showing higher capacity than others.

**Task-Involving Motivational Climate**

According to Nicholls (1984), in achievement settings individuals can focus on their personal effort and ability (i.e., be task-involved) or their performance in comparison to others (i.e., be ego-involved). He suggests important factors such as situational environment can impact individuals’ personal definitions of success as well as their cognitive, affective, and behavioral responses in achievement settings. These ideas have been applied to research pertaining to motivational climates in sport and physical activity settings. Research on the benefits of task-involving motivational climates report positive influences on the physiological level, psychological level, and team level in sport. When individuals perceive a task-involving motivational climate in a physical activity setting they are more likely to experience benefits such as enjoyment, more intrinsic motivation, and more positive mood states (Brown, Fry, & Little, 2013; Huddleston, Fry, & Brown, 2012), and better team cohesion in group sport (Heuze, Sarrazin, Masiero, Raimbault, & Thomas, 2006). Questionnaires such as the Perceived Motivational Climate in Sport Questionnaire (Seifriz, Duda, & Chi, 1992), Perceived
Motivational Climate in Sport-2 Questionnaire (Newton, Duda, & Zin, 2000) and Perceived Motivational Climate in Exercise Questionnaire (Brown et al., 2013) have all been developed to assess motivational climate in sport and exercise settings in research. Huddleston, Fry, and Brown (2012) examined the relationship of employees’ perceived motivational climate and aspects of intrinsic motivation in a corporate fitness facility. They found those members who perceived a higher task involving climate were more likely to report more interest and enjoyment, perceived competence, and higher effort/importance in relation to exercise than those perceiving an ego involving. Similar research has been carried out in a sport setting as well. Seifriz, Duda, and Chi (1992) surveyed male high school basketball players to examine the relationship between perceived motivational climate on intrinsic motivation and views on effort. The players who perceived a mastery (task) involving climate reported higher levels of enjoyment in comparison to athletes who perceived their team climates were low in mastery orientation. Additionally, those players who perceived a high mastery involved climate reported higher levels of intrinsic motivation. Results also revealed those athletes who perceived a high mastery involving climate were more likely to believe effort leads to success, whereas players perceiving a high performance (ego) involving climate were more likely to believe ability leads to success. This finding is exactly in line with Nicholls previously mentioned ideas arguing task involvement leads to individuals valuing high effort. This may be true, because task-involved individuals believe their efforts can lead to success, whereas ego-involved individuals view success in relation to performance of others. If ego involved individuals do not believe they have the ability to do better than others they may find no justification for effort, and may not exhibit high
effort. For coaches and fitness instructors, this is especially pertinent, as they likely want their team or client to exhibit high effort in pursuing a health, fitness, or performance goal.

Research has revealed a positive relationship between individuals’ perceptions of a task-involving motivational climate in physical activity and higher intrinsic motivation when using self-report measures (Huddleston et al. 2012). Solomon (1996) utilized a more objective measure to examine the relationship between perceived motivational climate and engagement in a task in a physical education setting. Motivational climates were manipulated so students were placed in either a task-involving or ego-involving setting while learning to juggle. After video coding the students’ practice behaviors, findings revealed students in the task-involving condition were more persistent in practice at a difficult level than those in the ego-involving condition. Solomon’s research added actual observed credence to the research relating task involving motivational climates to higher levels of persistence and intrinsic motivation. By using a more objective measure (i.e., literally observing persistence), Solomon further solidified what the quantitative research has found, providing further evidence that a task-involving motivational climate in physical activity settings seems to promote more effort in participants.

Less research has explored the relationship of perceptions of motivational climates to individual physiological responses. Hogue, Fry, Fry, and Pressman (2013) recently created controlled task and ego-involving conditions for students learning how to juggle, similar to Solomon’s study (1996), but they set out to also assess physiological effects of task- and ego- involving motivational climates. Using cortisol (a hormone released during
stress) levels to measure stress responses, researchers found that participants in an ego-involving climate experienced higher levels of cortisol than those who learned to juggle in a caring/task-involving climate. Additional factors such as anxiety and self-confidence were also analyzed in relation to motivational climate. Findings provided further support for the benefits of a task involved motivational climate. Cortisol levels of those in the caring/task-involving group actually decreased below baseline. Additionally, the caring/task-involving group also had no significant increase in cognitive and somatic anxiety but did have increased self-confidence.

Smith, Smoll, and Cumming (2007) were interested not only in anxiety and motivational climate but also how a climate intervention for coaches of young athletes would affect the performance anxiety of the athletes. Their research revealed athletes under the coaches in the intervention condition (i.e., to create a more task-involving climate), perceived coaches as more mastery involved after the intervention. Twelve weeks post intervention, those athletes playing for the intervention coaches group exhibited a decrease in scores on all sub scales of a sport anxiety survey that measures somatic anxiety, worry, and concentration disruption. The athletes in the control group reported increased anxiety as the season progressed.

In a similar vein, research also tends to support the positive effect of task involving motivational climates for team sports in relation to cohesion and collective efficacy. Heuze, Sarrazin, Masiero, Raimbault, and Thomas (2006) demonstrated a positive link between a task-involving motivational climate to group integration (cohesion) and team collective efficacy in elite female teams.

Ego-Involving Motivational Climate
When an ego-involving climate is created, where performance in relation to others is emphasized, and effort is valued only when it leads to outperforming others, then intrinsic motivation, physiological and psychological effects are often quite different than with individuals in a task-involving motivational climate. Ego-involving motivational climates in physical activity have been correlated with many detrimental effects. Hogue et al. (2013) found these effects on both the physiological and psychological level of an ego-involving motivational climate in the previously mentioned study. While the individuals in the task-involving group showed a decrease in cortisol when learning how to juggle, those participants placed in the ego-involving climate had an increase. The article further discussed the implications of the effect of heightened cortisol levels in sports and physical activity performance such as decreased bone mass, decreased cognitive ability, and mood disorders. The ego-involved group individuals not only had higher cortisol, they put forth less effort, experienced less enjoyment, and reported feelings of stress, shame and self-consciousness significantly greater than the task-involving group.

Another interesting aspect of the study included intention to continue juggling, as the ego-involving group reported less intent to continue juggling. This information is specifically notable for those working on physical activity initiatives within a population. If individuals perceive an ego-involving climate in a physical activity setting they may be less likely to adhere to recommended activity levels. Additionally, for sport coaches and fitness instructors, the negative physiological effects of an EI climate may be worth of consideration. If coaches want their players’ heads in the game, or fitness professionals want their clients focused on learning new exercise techniques, then decreased cognitive
ability as a result of heightened cortisol does not seem advantageous.

Intrinsic motivation is another desired aspect for those participating in physical activity of any kind. Kavussanu and Roberts (1996) examined the relationship between perceived motivational climate and intrinsic motivation and self-efficacy in a university beginning tennis course. They found, for both males and females, that a performance (ego) climate negatively predicted intrinsic motivational levels. While perceived ability was the largest contributor to self-efficacy for both males and females, it was followed in strength by performance motivational climate as a negative predictor of self-efficacy. These findings suggest that while motivational climate may not be the most important contributor to high self-efficacy, perceptions of an ego-involving climate is a significant predictor of negative self-efficacy.

Another interesting aspect of the research involving motivational climate in sport pertains to the effect of climate on psychobiosocial states. Bortoli, Bertello, and Robozza (2009) used a 14-item scale with 7 pleasant and 7 unpleasant states pertaining to the psychobiosocial constructs (emotion, cognition, motivation, bodily reaction, movement, performance, and communication) to study the relationship of dispositional goal orientations, motivational climate and psychobiosocial states in youth sport participants. Among a multitude of relationships, ones relating to a performance (ego) motivational climate emerged with performance climate being positively related to most unpleasant states, except movement and communication. Further research of a similar nature by some of the same authors added competence (perceived and actual) into the mix of constructs. Bortoli, Bertollo, Comani, and Robazza (2010) concluded that when youth have a high task orientation, low perceptions of competence, and perceive a high
performance (ego) climate in sport it is detrimental to young athletes. Additionally, youth
high in task orientation with high perceived competence exhibited low levels of pleasant
psychobiosocial states when placed in a performance oriented climate. Research relating
to motivational climate and psychobiosocial states seems to point to various relationships
between ego-involving climate in sport and either high scores on unpleasant states scales,
or low scores on pleasant state scales. With the development of the psychobiosocial
measure, researchers further added to the case for detrimental effects of an ego-involving
climate in sport.

Fitness instructors are a specific population aside from coaches who might benefit
from knowledge of task- and ego-involving motivational climates in physical activity. If
the goal of fitness instructors for their clients is enjoyment and adherence to a physical
activity regimen then research suggests creating an ego involved motivation climate as
counterproductive. Harju, Twiddy, Cope, Eppler, and McCammon (2003) conducted a
study examining performance and mastery goals of women at a fitness center and their
preferred style of motivation by fitness instructors. In this context of group exercise, none
of the groups’ preferred instructors placed emphasis on performance. Results suggest
fitness instructors should engage in encouragement and place greater emphasis on
teaching towards improvement, instead of pressuring individuals to perform to external
standards.

Contents of one review of motivational climate in physical activity provides
additional evidence of the negative consequences of ego-involving motivational climates.
Ntoumanis and Biddle (1999) examined fourteen studies relating to motivational climate
and physical activity. Results, supported by accumulating effect sizes over all studies
pointed towards the simple conclusion that ego-involving instructions given in physical activity settings lead to an increased likelihood of individuals to exhibit maladaptive behavioral patterns such as increased stress, worry and focus on ability in comparison to others. The researchers reached this conclusion taking into account studies pertaining to short and long term interventions on motivational climate in sport, school physical education, and exercise.

**Caring Climate**

Task and ego involving motivational climates have received extensive attention in physical activity literature for almost three decades. Only in the last decade though has a new focus emerged with research into experiences of individuals in sport and physical activity settings in relation to a perceived caring climate. While the ideas of caring climates are certainly nothing new, only in 2007 was a scale for measuring perceived caring climate in physical activity developed (Newton et al., 2007). Developers of the scale were greatly influenced by Nel Noddings (1984). Noddings’ ideas emphasized that caring entails paying attention with engrossment i.e., trying to experience another’s frame of reference with an open mind. Another construct of caring on which Noddings’ works placed importance was promoting progress for the cared for first, instead of satisfying one’s own need. Her caring framework was focused through the lens of education hypothesizing that through listening, accepting, sympathizing and helping people in an educational environment individuals will develop an enjoyment for learning.

The caring climate scale was developed to “assesses the extent to which individuals consistently perceive a particular setting to be interpersonally inviting, safe, supportive, and able to provide the experience of being valued and respected.” (Newton et al., 2007,
While scores on the task-involving climate and caring climate scales were shown to have a positive correlation during development of the caring climate scale, the shared variance of caring and task-involving climates was small enough to suggest justification of the caring climate as a distinct entity for research purposes. This scale was shown to have validity specifically in physical activity settings.

In a similar fashion as a task-involving motivational climate, creating a caring climate in sport and exercise has been correlated with higher levels of planned continuance of an activity, commitment, enjoyment, psychological well-being, and more. Due to their similarity, measurement of caring and task-involving climates have been examined together in exercise psychology research. In the mentioned research by Hogue et al. (2013) instructors teaching participants to juggle in a task-involving session were trained to also utilize the theoretical framework within the caring climate in physical activity scale to creating a caring/task-involving climate in conjunction with each other. The findings in the research included the caring/task-involving group reporting significantly more enjoyment/effort as well as less anxiety than the ego-involving group. Participants’ perceptions of a caring/task-involving climate in physical activity settings have been associated with higher intrinsic motivation and commitment to exercise than those who perceive an ego-involving climate. (Brown & Fry, 2013). Additionally, Moore and Fry (2014) found perceptions of a caring and task-involving climate were positively related to exercise ownership (participants’ feelings of having a positive influence over their own and exercise groups’ experience) and empowerment (ability to reach health/fitness goals through exercise) and negatively related to perceptions of an ego-involving climate.
Much of the research involving specifically caring climate is focused within youth sport participation. This may be due to the nature of the positive effects of a caring climate and how it may help in healthy physical and psychological development for youth. Newton, Watson, Gano-Overway, Fry, Kim, & Magyar (2007) studied effects of a caring based intervention on physical activity for youth involved in two National Youth Sports Programs. One program followed an agenda with staff trained in emphasizing themes of caring while the other followed the normal training protocol for the sport program. As hypothesized, the participants in the intervention group perceived a higher level of caring climate. The researchers also found the traditional group perceived a higher ego involving climate than the caring group. Also, the children in the caring group were more likely to say they planned to be involved with the program the following year. Another interesting finding was the traditional group showed lower levels of empathy than the caring group.

A study by some of the same authors examined the relationship between youth soccer players’ caring climate perceptions and enjoyment, caring behaviors, attitudes and behaviors towards coaches/teammates, as well as commitment to the sport (Fry & Gano-Overway, 2010). The findings revealed the strongest correlations with caring climate were in a positive direction with attitude towards coaches, enjoyment, and commitment to playing soccer. Among other pertinent findings, enjoyment was positively correlated with continued soccer involvement. It seems that, at least for youth, enjoyment of sport might lead to continued involvement, which can be an ultimate outcome of creating a caring climate.

Fry, Kim, Gano-Overway, Guivernau, Newton, and Magyar (2012) examined the
relationship between affective self-regulatory efficacy, perceived caring climate, and emotional well-being using a sample of youth sport participants. Specifically, the researchers wanted to understand if individuals’ perception of a caring climate is mediated by their perceived ability to regulate positive and negative emotions, and if that in turn would predict components of psychological well-being such as hope, happiness, depression, and sadness. Data analysis revealed interesting findings across all variables. Perceptions of a caring climate were positively associated with self-efficacy for both positive and negative emotions, and all three variables had positive associations for hope and happiness, as well as negative associations with depression and sadness. Data from the mediating effect of emotional regulation self-efficacy on the path of caring climate to psychological well-being revealed, simply, that one route through which caring climate influences youngsters’ psychological well-being is through building their efficacy for emotion regulation. Essentially, in caring climates it seems youth are able to better deal with and express their positive and negative emotions, which benefits their psychological well-being. The authors hypothesize that a caring climate might lead individuals to feel less afraid of involving themselves in an activity, in turn leading to more interaction with others and feeling comfortable in expressing and dealing with their emotions appropriately among peers. While this hypothesis still needs further testing, the findings of the study do reveal how a caring climate in sport can positively impact youth participants’ psychological well-being in relation to the activity. This has important implications promoting the use of caring climates in youth sport activities.

Creating Task and Caring Climates

The research outlining some positive effects of task and caring motivational
climates are important additions to literature, but what is equally important is understanding how interventionists can create climates that are perceived as high in task and caring in physical activity settings. Unfortunately, there is not much research outlining specifically how to create caring/task involving climates. One article of note by Brown and Fry (2011) outlined specific strategies for creating a task involving/caring climate in a fitness center. They commented on the importance of targeting all different types of employees to create the desired motivational climate.

Front desk clerks, membership representatives, group fitness instructors, supervisors and all other staff need to be on board to influence the exercise experience of members (Brown & Fry, 2011). Themes of creating a task/caring involving climate in a fitness facility applicable to all employees include warm greetings, learning names when possible, and being willing to answer questions. Additionally, the researchers suggest membership coordinators simply engage new members to talk about their goals and interests to foster feelings of being valued by members. Employees who work in membership can know which fitness instructors a member might mesh well with by simply gauging what they are looking for in the fitness facility. This may lead gym patrons to feel more understood and important to facility staff.

Group fitness instructors and personal trainers can follow similar guidelines to increase physical activity enjoyment and adherence by club members. Trainers and fitness instructors can have an impact, as Brown and Fry state (2011, p. 75), simply “through the use of certain language when explaining moves or demonstrating levels of equipment. For example, rather than describing the green exercise band as “the easiest,” instructors can introduce the band as “option one, appropriate if you are new to this type
of equipment.” Such language targets the task-involving construct of focusing on personal mastery as opposed to external normative comparison. Fitness instructors and trainers should also attempt to focus on process goals instead of outcome goals. Specifically, focusing on the little steps that lead to change and emphasizing more intrinsic rewards of exercise such as more energy, and enhanced feelings of well-being is more likely to promote adherence and enjoyment. With additional focus on effort and improvement instead of, for example, the exact amount of weight loss in a given time frame, fitness professionals can create a more task-involving climate.

Supervisors of fitness facilities also play an integral role in positive climate creations. Brown and Fry (2011) note supervisors need to create a caring climate for the staff as well, making them feel valued so they are more willing to help members feel valued. Supervisors who take part in the hiring process must also be attentive to possible employees who seem to be receptive to the constructs of a task/caring climate, or who may exemplify them already on their own. Training seminars teaching employees about how to create a caring and task-involving climate for employees might also be of special interest to supervisors.

The research, through examining the constructs of a task-involving and caring climate does paint a picture of what needs to be done to create those climates in sport and physical activity settings. In addition, by looking at the topical ideas that make up the Perceived Motivational Climate in Sport Questionnaire (PMCSQ), Perceived Motivational Climate in Sport-2 Questionnaire (PCMSQ-2), Perceived Motivational Climate in Exercise Questionnaire (PMCEQ), and Caring Climate Scale (CCS) one can gather ideas of how to create caring and task-involving climates in sport and physical activity settings.
activity settings. It seems the constructs measured in the scales include perceptions of cooperative learning, effort/improvement, punishment for mistakes, feeling valued, and more. Essentially in any physical activity setting stressing cooperation, recognizing and fostering the importance of effort and improvement without external comparison, and making participants feel valued and supported, is important when trying to create a task-involving and caring climate.

Directions for Future Research and Conclusions

Research relating to motivational climate and effort in physical activity using somewhat objective measures as opposed to self-report measures within existing research is lacking. Solomon (1996) used a more objective measure of persistence of students in a physical education setting when learning a difficult task. Future more objective research in sport or fitness facilities might reveal similar results as Solomon who found that participants in a task-involving condition exhibited more persistence in practicing a task at a difficult level.

Solomon’s (1996) approach to measure the persistence of students in a physical education setting when learning a difficult task was an interesting step worthy of further consideration. She actually recorded observed persistence in learning to juggle with students in a task-involving climate. Hogue et al. (2013) also noted instructors and confederates in a study unanimously agreed participants in the caring/task-involving climate gave more effort when learning to juggle than participants in the ego-involving climate. Along with higher observed effort in a caring/task-involving, Hogue et al. (2013) found a caring/task-involving motivational climate in physical activity lead to increased effort via self-report measures (Hogue et al., 2013). Noteworthy advances in the field of
neuromechanics has led to the possibility for those working in exercise psychology to quantify effort. The Interpolated Twitch method offers an interesting avenue by which actual effort can be quantified via measurement of muscle activation and force production. Twitch interpolation involves measurement of the motoneuron drive to a muscle and the translation into force (Taylor, 2009). Additionally, the method involves imposing a stimulus to the peripheral nerve during a voluntary muscle contraction. Theoretically, the stimulus will recruit all possible muscle motor units to create an increase in force referred to as superimposed action potential of the muscle (Herbert & Gandevia, 1999). The interpolated twitch is a momentary spike of force due to evoked activation of all potential muscular motor units. Both potential voluntary force and evoked force can be measured. They can then be compared for calculation of percent voluntary inactivation (Behm, Power, & Drinkwater, 2001). While self-reported effort in relation to motivational climate is an important marker of what might lead to maximal effort in sport and exercise, thus far there has not been any attempt to objectively measure effort levels.

The ITT has been used extensively in research related to neuromuscular function and variables effecting muscle activation. One study considered the effect of caffeine on muscular function (Kalmar & Cafareli, 1999). Researchers utilized the ITT among other tests to determine caffeine’s effect on muscle activation of the knee extensors. They found after administration of caffeine to subjects they showed increased muscle activation and increased time to fatigue. Another interesting use of the ITT in research was to determine how different forms of stretching affect strength. Fowles and McDougall (2000) examined particularly passive stretching and strength. They had study
participants perform 30 minutes of passive plantar flexor stretches. Using the ITT researchers found prolonged stretching of the muscle decreased voluntary strength for up to one hour post stretch. Age related changes in neuromuscular function have (Mau-Moeller, Martin, Lindner, Bader, & Bruhn, 2013) been found using the ITT method and other neuromuscular tests (H-Reflex and EMG) to examine mechanisms of decreased voluntary muscle activation and explosive strength in the elderly. Other research of note by Folland, Hass, and Castle (2011) examined muscle activation and voluntary strength of Parkinson’s disease patients on and off medication. They found patients on medication had reduced muscle activation and reduced knee extension strength. Motivational climate, specifically caring/task-involving and ego-involving climates might prove another variable affecting voluntary muscular activation and consequently, strength. Findings could be of particular interest to athletic trainers and coaches who may find that in order to get the performance they desire from athletes, they should ironically create a task-involving climate not actually stressing performance. Additionally, personal trainers, group fitness instructors, physical therapists, and those in health professions involving physical activity who may want to increase effort from a targeted person/persons might be particularly interested in what types of motivation will elicit high effort.

Additionally, much of the research involving motivational climates seems to focus on youth and young adults. While this is certainly an important population to consider, there seems to be an obvious slant of research focusing on these populations. It might be interesting for future research to examine how adults approaching middle age and older respond to different motivational climates in physical activity. The mentioned research by Huddleston, Fry, and Brown (2011) regarding motivation climate in a corporate fitness
facility is a step in that direction. It is just as important to examine possible ways to encourage adult physical activity as it is for youth and young adults. As, Harjue et al. (2003) found, members of a gym taking fitness classes did not prefer instructors that focused on performance, an ego-involving climate construct. More research with adult populations reporting the positive effects of a caring and task-involving climate might change the way personal trainers, fitness instructors, or organizers of adult sport leagues approach physical activity.

Another useful direction for future research involving motivational climates and physical activity might include building off the study by Hogue et al. (2013) examining a physiological change associated with motivational climate. While, as pointed out in the research, cortisol can have detrimental effects both on the physical and mental level, there may be other things going on physiologically in motivational climates worth studying. High stress has been shown to disrupt the balance of pro and anti-inflammatory cytokines in humans (Maes et al., 1998) that has been linked with fatigue, depressed mood, difficulty maintaining attention, and difficulty sleeping (Suzuki et al., 2000). If ego-involving motivational climates have been correlated with higher stress and anxiety levels, this is likely causing unwanted consequences on a physiological level as well.

Across the board, research seems to outline extensively the positive effects of task-involving and caring motivational climates on effort, enjoyment, intrinsic motivation and more ego-involving motivational climates are correlated with higher stress levels, less effort, more shame, more self-consciousness, less intrinsic motivation, lowered self-efficacy and more. The more research promoting task and caring climates in physical activity settings, the more likely professionals in sport and exercise may be to shift their
focus to encouraging high effort and improvement as opposed to winning or outperforming others. With this shift may come more enjoyment and adherence to regular physical activity with increased effort level and decreased psychological stress, leading to individuals adopting healthier lifestyles in society through sport and exercise.


APPENDIX C

QUESTIONNAIRES
Pre Questionnaires

Name:

Ethnicity (Circle One):
- Caucasian/White
- African American/Black
- Native American
- Asian/pacific islander
- Hispanic/Latino
- Multiple
- Other

Student Status (Circle One):
- Freshman
- Sophomore
- Junior
- Senior
- Graduate Student

Directions: The statements below ask how you usually feel about exercise/physical activity. Please read each of the statements and circle the number on the 5-point scale listed below that shows how you feel.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Not Sure</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>I usually put a lot of effort into physical activities.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>It is important for me to do well when I do physical activities.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I usually try hard during physical activities.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I usually do not try very hard during physical activities.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

Directions: The statements below ask how you felt about your exercise session. Please read each of the statements and circle the number on the 5-point scale listed below that shows how you feel.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Not Sure</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>I usually find learning new physical activities interesting.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I usually have fun when I learn new physical activity skills.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I usually get involved when I’m doing new physical activities.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I usually enjoy trying new physical activities.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I usually find time flies when trying new physical activities.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
### Post Questionnaires

#### Physical Activity Feelings

**Directions:** The statements below ask how usually feel about physical activity. Please read each of the statements and circle the number on the 5-point scale listed below that shows how you feel.

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Not Sure</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I usually find learning new physical activities interesting.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>I usually have fun when I learn new physical activity skills.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>I usually get involved when I'm doing new physical activities.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>4</td>
<td>I usually enjoy trying new physical activities.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>I usually find time flies when I'm trying new physical activities.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

#### Environment in Exercise Class

**Directions:** Reach each statement and think about how much you believe the statement describes the environment in your exercise class. Then choose the answer that shows how much you disagree or agree with each statement.

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Not Sure</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1)</td>
<td>In this training session, the instructor encouraged us to try new exercises/skills.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>2)</td>
<td>In this training session, participants were hesitant/embarrassed to ask the instructor or other participants for help.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>3)</td>
<td>In this training session, the instructor gave most of her attention to only a few students.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>4)</td>
<td>In this training session, participants of all fitness levels were made to feel valued.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>5)</td>
<td>In this training session, the instructor praised participants only when they did better than other participants.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>6)</td>
<td>In this training session, participants felt embarrassed if they did not know how to use the equipment or perform the exercise/skill/drill/activity.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>7)</td>
<td>In this training session, participants felt good when they tried their best.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>8)</td>
<td>In this training session, participants felt welcome.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>9)</td>
<td>In this training session, participants helped each other learn.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Statement</td>
<td>Strongly Disagree</td>
<td>Disagree</td>
<td>Not Sure</td>
<td>Agree</td>
</tr>
<tr>
<td>---</td>
<td>---------------------------------------------------------------------------</td>
<td>-------------------</td>
<td>----------</td>
<td>----------</td>
<td>-------</td>
</tr>
<tr>
<td>10</td>
<td>In this training session, participants were encouraged to do better than others.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>11</td>
<td>In this training session, the instructor had his/her favorite participants.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>12</td>
<td>In this training session, the instructor encouraged participants to improve on skills they are good at.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>13</td>
<td>In this training session, participants felt successful when they improved.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>14</td>
<td>In this training session, only a few participants got praised.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>15</td>
<td>In this training session, trying hard was rewarded.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>16</td>
<td>In this training session, the instructor encouraged participants to help each other.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>17</td>
<td>In this training session, the instructor made it clear who she thought the most fit and/or most skilled participants were.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>18</td>
<td>In this training session, participants were excited when they did better than others.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>19</td>
<td>Only fit/skilled students participated in the training session.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>20</td>
<td>In this training session, the instructor emphasized always trying your best.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>21</td>
<td>In this training session, the instructor only noticed a few participants.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>22</td>
<td>In this training session, participants were afraid to make mistakes.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>23</td>
<td>In this training session, participants were encouraged to work on their weaknesses.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>24</td>
<td>In this training session, the instructor favored some participants over others.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>25</td>
<td>In this training session, the focus was to keep improving on each exercise/skill/activity.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>26</td>
<td>In this training session, participants really &quot;worked together&quot; as a team.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>27</td>
<td>In this training session, participants helped each other get better and excel.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>
## Directions

Read each statement and think about how much you believe the statement describes the environment in your Lawrence P&R fitness class. Then choose the answer that shows how much you agree or disagree with each statement.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Disagree</th>
<th>Disagree</th>
<th>Not Sure</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. During the session, participants were treated with respect.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2. During the session, the instructor respected the participants.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>3. During the session, the instructor was kind to the participants.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>4. During the session, the instructor cared about the participants.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>5. During the session, participants felt that they were treated fairly.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>6. During the session, the instructor tried to help participants.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>7. During the session, the instructor wanted to get to know all the participants.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>8. During the session, the instructor listened to participants.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>9. During the session, participants liked one another for who they were.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>10. During the session, the instructor accepted participants for who they were.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>11. During the session, participants felt comfortable.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>12. During the session, participants felt safe.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>13. During the session, participants felt welcome.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
Directions: The statements below ask how you felt about exercise session. Please read each of the statements and circle the number on the 5-point scale listed below that shows how you feel.

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Not Sure</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I put a lot of effort into learning weight training</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>It was important to me to do well during the training session</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>I tried very hard during the training session</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>4</td>
<td>I did not try very hard during the training session</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

Directions: The statements below ask how you felt about your exercise session. Please read each of the statements and circle the number on the 5-point scale listed below that shows how you feel.

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Not Sure</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I found the training session interesting</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>I had fun during the training session</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>I felt I got involved during the training session</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>4</td>
<td>I enjoyed the training session activities</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>I found time flew by during the training session</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>
**Directions:** The statements below ask how you felt about your exercise session. Please read each of the statements and circle the number on the 5-point scale listed below that shows how you feel.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Not Sure</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. This training session was stressful.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2. At times, I felt shame during the training session.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>3. I felt self-conscious during the weight training session.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>4. I plan on continuing to practice weight training.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>5. I am excited to continue weight training.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>