

1 EFFECTS OF A MOTIVATIONAL CLIMATE INTERVENTION IN GROUP  
2 EXERCISE ON PARTICIPANTS' MOTIVATIONAL AND OTHER  
3 PSYCHOLOGICAL RESPONSES

4 By

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6  
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Chairperson Mary Fry, Ph.D.

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## Abstract

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.

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## Introduction

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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) and 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.

145           Recent research on motivational climate in exercise has been grounded in Nicholls,  
146 (1984, 1989) Achievement Goal Perspective Theory. According to Nicholls, in  
147 achievement settings, individuals can either focus on their personal effort and ability (i.e.,  
148 be task-involved) or their performance in comparison to others (i.e., be ego-involved).  
149 AGPT identifies important factors such as how the situational environment can impact  
150 individuals' personal definitions of success as well as their cognitive, affective and  
151 behavioral responses in achievement settings. With regard to the climate, Nicholls  
152 maintains that individuals can perceive a more task- or ego-involving climate in  
153 achievement domains (1989).

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

167           Research on motivational climate in exercise has also begun to measure how a

168 perceived caring climate can improve participants' experiences in exercise. The Caring  
169 Climate Scale in physical activity (CCS; Newton et al., 2007a) was established to  
170 examine perceptions of a setting to be inviting, safe, support, and feeling valued and  
171 respected. Developers of the scale were influenced by educational philosopher Noddings  
172 (1984), whose writings call for more attention to be given to creating a caring climate in  
173 educational settings. Noddings believed through listening, accepting, sympathizing, and  
174 helping people in an educational environment, individuals would develop a passion for  
175 learning. These assumptions have carried over to the realm of exercise environments, as  
176 recent research in exercise psychology has provided support for the theoretical tenets of  
177 AGPT and the caring framework (Brown et al., 2013; Huddleston et al, 2012).

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

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

203         Also worthy of noting is the relationship between motivational climates in  
204 physical activity and enjoyment of exercise. Various measures of exercise enjoyment  
205 have been used in literature including the interest/enjoyment subscale of the IMI  
206 (McAuley et al., 1989) as well as the Sport Satisfaction and Enjoyment Scale (Duda &  
207 Nicholls, 1992). Huddleston et al. (2012) found a perceived TI climate by members of a  
208 corporate fitness facility was positively related to interest/enjoyment in exercise by those  
209 who used the facility. Similarly, perceptions of a C/TI motivational climate have been  
210 shown to be correlated with interest/enjoyment among female participants in college  
211 aerobics classes, and enjoyment as a reason to engage in physical activity (Brown & Fry,  
212 2013). Lifelong participation in regular exercise can mean constantly learning new skills  
213 related to different forms of physical activity. When examining factors which may lead to

214 enjoyment of learning a new skill, it is important to note the influence of motivational  
215 climate. Hogue et al. (2013) found participants in an intervention assigned to a C/TI  
216 group when learning to juggle reported greater enjoyment than those assigned to learn to  
217 juggle in EI climate. This has also been shown in research by Lloyd and Fox (1992) who  
218 found youth female participants in a physical education programs assigned to a TI  
219 climate enjoyed their classes more than those placed in an EI climate class.

220         An additional benefit of creating a C/TI motivational climate in a physical activity  
221 is increased levels of commitment/expected future participation and excitement to  
222 continue exercising. This has been revealed in research with caring and task-involving  
223 climates measured with one or both climates together. One example occurred with a  
224 caring based physical activity intervention with adolescents. Participants reported higher  
225 levels of future expected participation in the caring focused group (Newton et al., 2007b).  
226 Additionally, female adolescents placed in a TI climate for an aerobic fitness program  
227 reported more motivation to continue physical activity than EI climate participants.  
228 Perceptions of a C/TI climate have also been positively and significantly correlated with  
229 commitment to exercise (Brown & Fry 2014). Hogue et al. (2013), in an intervention to  
230 teach people how to juggle in a C/TI or EI motivational climate, found those in the C/TI  
231 climate reported greater interest and excitement to continue juggling than those in the EI  
232 climate. These findings are directly applicable in exercise settings, where often  
233 participants are learning new techniques and skills related to physical activity.

234         Research also seems to suggest another benefit of a C/TI climate in exercise  
235 settings is to lessen the experiences of negative psychological states. In one instance,  
236 researchers examining perceptions of a TI and EI climate among users of a student fitness

237 center found positive mood states (i.e. calm, vigor, and well-being) were positively  
238 related to a TI climate whereas the negative mood constructs measured (i.e. depressed,  
239 anxiety, and fearful) were positively associated with an EI climate regardless of gender  
240 (Brown et al., 2013). Similar research among underserved youth in a sport camp found  
241 perceptions of a caring climate was positively associated with feelings of hope and  
242 happiness and negatively related to depression and sadness Fry et al., 2012). For the  
243 purpose of this research, feelings of stress, shame and self-consciousness in relation to  
244 motivational climate were examined. Past research measuring these same psychological  
245 responses found all variables significantly negatively related to a C/TI and positively  
246 related to an EI climate (Hogue et al., 2013).

247         Creating a C/TI motivational climate for participants in physical activity seems to  
248 be advantageous on a multitude of fronts. Perceptions of a C/TI climate, as suggested by  
249 previous research, may lead participants to enjoy exercise more and give more effort in  
250 the process. Additionally, if adherence to physical activity is one of the goals of fitness  
251 professionals, gym managers, or public health officials then it is worthy to note the  
252 evidence suggesting how specifically a C/TI motivational climate can positively  
253 influence commitment to exercise and excitement to remain active. It is equally important  
254 to emphasize how C/TI may lead to the experience of more positive mood states in  
255 physical activity while an EI climate may do the exact opposite. The purpose of this  
256 research was to examine the effects of a motivational climate intervention among female  
257 college students in a group weight training session on participants' motivational  
258 responses, particularly their interest/enjoyment, effort, feelings of stress, shame, and self-  
259 consciousness, as well as their plan to continue weight training and excitement to

260 continue. Specifically those in a C/TI group climate were expected to report higher effort  
261 and enjoyment levels during the training session and lower stress, shame and self-  
262 consciousness after the session than participants in the EI group. Additionally,  
263 participants in the C/TI climate group were predicted to have greater intention and  
264 excitement to continue weight training in the future than the EI group members.

## 265 **Method**

### 266 **Participants**

267 Female college students ( $N=20$ , age range: 18-25) volunteered to participate in a  
268 small group weight training session and received 20 dollars for their participation. They  
269 were randomly assigned to one of two experimental groups that had distinct motivational  
270 environments: a) a caring/task-involving climate or b) an ego-involving climate.

271 Participants were required to be physically inactive, have not followed any regular  
272 exercise routine with more than two days of targeted physical activity per week over the  
273 past year. All participants were required to fill out a health history questionnaire to  
274 confirm they would not be putting themselves at any obvious risk by participating in the  
275 session. The Institutional Review Board at the University of Kansas approved the study  
276 (see Appendix A), and participants provided their informed consent.

### 277 **Assessments and Measures**

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

283           **Pre and post session questionnaires**

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

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

297           **Post-session only questionnaires**

298           **Caring Climate.** The 13-item CCS was used to asses participants' perceptions of  
299 how inviting, respectful, supportive, and accepting the climate was during the personal  
300 training session. One sample item of the scale is "In this session, I felt liked for who I  
301 am." The CCS has demonstrated strong psychometric properties (Gano-Overway et al.,  
302 2009; Newton et al., 2007a).

303           **Perceived Motivational Climate.** The 27-item Perceived Motivational Climate in  
304 Exercise Questionnaire (Huddleston et al., 2012) was used to asses participants'  
305 perceptions of the extent that they viewed the climate to be tasking-involving versus ego-

306 involving during their group training session. An example of an item used for each scale  
307 is “In this training session, participants were made to feel valued” (task-involving) and  
308 “In this training session, students felt embarrassed if they did not know how to use the  
309 equipment or perform the exercise” (ego-involving). Huddleston et al. (2012) reported  
310 support for the factor structure of the PMCEQ and internal consistency for the task-  
311 involving and ego-involving scales at .88 and .86, respectively.)

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

### 317 **Procedure**

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

327

328 During the session participants learned proper technique for the dumb bell bench

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

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

#### 340 **Instructor / Confederate Training**

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

#### 345 **Caring/task-involving climate intervention**

346 The C/TI session began with an introduction followed by an icebreaker to  
347 encourage participants get to know each other. Participants played two truths and a lie.  
348 Each told the participants in the group two truths and a lie about themselves and everyone  
349 had to guess which were the truths and which was the lie. Afterwards, the weight  
350 training session began. During the intervention participants were taught the correct form  
351 for three exercises. The instructor gave technical instruction for each participant. Each

352 participant was given the opportunity to complete the three sets of each exercise in order  
353 to have a chance to improve and learn. Instructors and confederates encouraged high  
354 effort and recognized the effort and improvement of the participants. Confederates made  
355 sure to be encouraging of each other as well as the true participant. Instructors were also  
356 sure to call participants by their name and ask if they had any questions to help create the  
357 caring aspect of the climate.

### 358 **Ego-involving climate intervention**

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

### 370 **Results**

371 The means and standard deviations for each of the scales by climate group (i.e.,  
372 C/TI and EI) is presented in Table 2. Cronbach's alpha reliability coefficients were  
373 calculated for each of the climate scales as well as effort and enjoyment scales, all of  
374 which had adequate values ( $\geq .80$ ).

### 375 **Motivational Climate Manipulation**

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

### 383 **Psychological Variables for Pre and Post Exercise Session**

384 A 2(Climate: C/TI and EI) x 2 (Time: pre exercise session vs. post exercise  
385 session) MANOVA was conducted to determine whether effort and enjoyment varied for  
386 the participant. Results revealed a significant interaction for Climate x Time,  $F(1, 36) =$   
387  $26.17, p < .001, \text{partial } \eta^2 = .42$ , for enjoyment but not for effort (See Figure 1 and 2). In  
388 summary, participants in the C/TI climate group reported significantly higher enjoyment  
389 in the weight training session than did the EI group. It is noteworthy that the effort  
390 results,  $F(1, 36) = 1.84, p = .18, \text{partial } \eta^2 = .05$  while not significant, showed a trend with  
391 the C/TI climate group reporting increased effort from pre to post intervention, while  
392 effort remained constant for the EI group.

### 393 **Post Variables Only**

394 Two separate MANOVAS were conducted to examine whether the climate groups  
395 differed on the five post-only variables (See Figure 3). The first MANOVA examined  
396 whether the participants varied in their plan and excitement to continue to weight train in  
397 the future based on their climate group assignment. Results revealed that participants in

398 the C/TI climate group reported significantly greater excitement to continue weight  
399 training in the future than did the EI climate group,  $F(1, 18) = 5.83, p \leq .05$ , partial  $\eta^2 =$   
400 .25. Though there was no significant difference between the climate groups on their plan  
401 to continue weight training the trend again was for the C/TI group to report higher scores  
402 than the EI group.

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

### 409 Discussion

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

420 Nicholls maintained a climate with emphasis on TI features would lead to more positive  
421 responses, as is supported by this research.

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

439           Though there was a strong difference in enjoyment reported among the climate  
440 groups this was not the case with regard to effort. Prior to the exercise session both  
441 climate groups reported they exert moderately high effort when engaging in physical  
442 activity, and there was no significant difference in effort scores between the climate

443 groups. It was expected, however, that self-reported effort scores would vary significantly  
444 among the climate groups after the exercise session, as prior research has consistently  
445 revealed that participants who perceive C/TI climates self-report exerting greater effort  
446 than those who perceive EI climates (Cecchini et al., 2001; Hogue et al., 2013; Newton  
447 et al., 2000). Alternatively, results from this study found no significant difference post  
448 session between the climate groups. There was a non-significant trend worth noting, with  
449 scores on the effort/importance scale remaining consistent for those in the EI climate  
450 from pre to post session (i.e., 3.7), but increasing with C/TI climate participants (i.e., 3.8  
451 to 4.4). In previous research with larger sample sizes participants withdrawal of effort  
452 was likely less noticeable (e.g., the teacher-student ratio was 1-15+ in contrast to the  
453 current study where the ratio was 1-3). Given the small group nature of the weight  
454 training session in this study, withdrawing effort would have been extremely noticeable  
455 in a three person training session, and may not have been a viable option for participants.  
456 Though the women in the EI weight training sessions were experiencing psychological  
457 distress as suggested by results, withdrawing effort would have increased criticism and  
458 judgment from the instructor and confederates in the climate. The participants in the EI  
459 climate may have felt they needed to continue to give adequate effort through the session,  
460 even though they were experiencing stress and not enjoying the experience. It is not  
461 likely that participants in this situation would look forward to future exercise sessions and  
462 give high effort when not in a supervised session, particularly if they were not  
463 experienced exercisers. Though not significant, the participants in the C/TI climate  
464 increased their effort from pre to post session over a half point, which suggests the  
465 climate potentially played an important role or might over time if they continued to

466 experience a positive and supportive environment. It should be the goal of fitness  
467 instructors to increase effort in conjunction with positive psychological responses during  
468 exercise.

469         Following the intervention, there was no significance different between the  
470 climate groups relating to their planned continuation of weight training but there was a  
471 trend for the C/TI group to report higher scores on the item related to planned  
472 continuation. The criteria to participate in this study required participants had not  
473 engaged in regular physical activity over the past year (i.e., more than twice a week).  
474 The transtheoretical model of behavior change has been used in exercise behavior  
475 research and may be worthy of addressing in relation to these findings (Prochaska and  
476 Marcus, 1994). The theory posits people go through various stages of change when  
477 beginning to adapt a new behavior. Though female participants in this research were not  
478 currently regularly engaging in physical activity, they might have been considering a  
479 change given their interest in participating in a weight training session. Many of the  
480 participants may have likely fallen into the stage of contemplation (considering beginning  
481 to engage in weight training) or preparation (preparing to begin regularly weight  
482 training). Given their possible stage of change not firmly established as regular  
483 exercisers, it may have been that a 30-minute session was not enough to strongly affect  
484 whether the women planned to continue weight training. The difference in scores, though  
485 not significant, might have been if the sample size was larger (i.e., C/TI group was 3.7 vs.  
486 the EI group score of 3.0).

487         While there was no significant difference between the climate groups plan to  
488 continue a weight training program, there was a significant difference in the groups'

489 excitement to continue a weight training program. Specifically, the C/TI group reported  
490 significantly greater excitement to continue weight training than those in the EI climate.  
491 While these variables (i.e., intent to continue weight training and excitement to continue  
492 weight training) seem very similar, results revealed different responses between the  
493 groups. Because females in this research were likely somewhat interested in weight  
494 training though not regularly engaging in it, the climate alone may not have strongly  
495 affected their interest and plan to continue to engage in physical activity. However,  
496 clearly being part of the C/TI climate was key for helping participants become excited to  
497 continue the journey to engage in regular physical activity or dampen excitement, as was  
498 the case for the E/I group. If the goal of health professionals is to increase physical  
499 activity then excitement related to participation is a possible advantageous result of  
500 creating a C/TI climate.

501         In addition to the more positive benefits associated with the session for the C/TI  
502 group, motivational climate also had a significant effect on participants' feelings of  
503 stress, shame and self-consciousness during the weight-training session. Those in the EI  
504 climate reported significantly higher levels of each of the three negative mood states.  
505 These findings are as hypothesized and in line with previous research examining the  
506 same items (Hogue et al., 2013). Researchers have intentionally created a C/TI and EI  
507 climate teaching people to juggle in order to examine participant responses, and they  
508 found individuals in the EI climate reported greater stress, shame, self-consciousness  
509 (Hogue et al. 2013), and frustration with poor normative performances (Solomon, 1996)  
510 Experiencing these emotions in a physical activity setting is distracting from being able  
511 to focus on the task at hand and may help explain why a C/TI climate is helpful for

512 optimizing motivation. Further Hogue et al. (2013) found there was not only increased  
513 self-reported psychological stress, but also a physiological response via increased levels  
514 of the stress response hormone cortisol. Interestingly, women in the C/TI weight training  
515 session reported very low levels of stress, shame, and self-consciousness even though  
516 they were non-exercisers participating in a research study. Hogue et al. (2013) suggested  
517 that a C/TI can have a buffering effect on participants stress levels in physical activity  
518 settings. Findings reveal that the exercise instructor's motivation style is important and  
519 can have a definite impact on how people respond to their physical activity environment.  
520 Because this research supports the notion that aspects of specific climates can be created  
521 and perceived by participants, it is important to understand what type of motivation  
522 exercise participants prefer. This question was specifically explored by Harju, Twiddy,  
523 Cope, Eppler, and McCammon (2003) who found women exercisers preferred instructor  
524 styles emphasizing mastery as opposed to performance in relation to others, a tenant of a  
525 task-involving climate. Results from this research outline just how important it is for  
526 health professionals to intentionally work to create positive motivational climates in  
527 physical activity settings in order for participants to have a better experience with  
528 exercise.

529         One notable limitation of this research is the small sample size. Intervention  
530 research is time intensive and it was feasible to include 20 subjects (10 for each climate).  
531 The sample size was adequate to create the distinct motivational climates, but a larger  
532 sample size would have been advantageous in terms of examining the participant's  
533 motivational responses. In several cases the results approached significance, but with a  
534 larger sample size notable trends in responses to psychological variable scales may have

535 led to more statistically significant findings. In addition, the weight training session only  
536 lasted 30 minutes. Though results suggest this was enough for participants to experience  
537 the intended climate created and lead to a differences in responses, an intervention that  
538 lasted longer may have led to even more pronounced scores on the various scales used for  
539 this research. It would be interesting, for example, to have the women participate in  
540 several sessions over the period of a week. Another limitation of this research is that only  
541 females were included in the participant sample. Although tenants of AGPT do not  
542 predict gender differences (Nicholls, 1989), and previous research relating to examination  
543 of C/TI and EI climates on participant experiences did not find any main effect in relation  
544 to sex (Hogue et al., 2013) future research should attempt to include males as well as  
545 females.

546         There are many interesting routes for future motivational climate in exercise  
547 research could take to further evidence for the benefits of creating a C/TI for exercise  
548 participants. It is interesting to that both the instructor and confederates noted they  
549 experienced personal increased stress when carrying out the EI climate with research  
550 participants. They also noted that they did not sleep as well during this dating collection  
551 and felt more irritable. They indicated that their mood was enhanced when engaged in the  
552 C/TI sessions and the enthusiasm with the subjects seemed to be contagious for the  
553 group. After one session the instructor and confederates described how enjoyable it was  
554 to have the participant excited in the C/TI session and initiate giving “high fives” to the  
555 group. The instructor and confederates emphasized that such behavior was not present in  
556 the EI group session.

557           Noddings (1984) has described how caring interactions can require high energy  
558 and effort because individuals must be engaged in genuine listening and intent on the  
559 needs of the individual receiving the caring. However, this research suggests that creating  
560 an EI climate in exercise could have stressful effects for both the participants as well as  
561 the instructor. Future research might consider these issues more closely. There has not  
562 been much research examining psychological well-being of fitness instructors and sport  
563 coaches who create motivational climates for participants. Future research might explore  
564 how instructional styles (C/TI or EI) relate to psychological well-being parameters of  
565 those creating the climate.

566           Research relating to motivational climate and effort in physical activity using  
567 somewhat objective measures as opposed to self-report measures within existing research  
568 is lacking, and future research might employ a more objective method to assess effort.  
569 Solomon (1996) used an objective measure of persistence of students in a physical  
570 education setting when learning a difficult task. She videotaped the students juggling and  
571 qualitatively observed that students in the TI groups engaged in more difficult trials and  
572 demonstrated greater persistence than students in the EI groups. Future research using  
573 more objective measures in sport or fitness facilities might reveal similar results as  
574 Solomon who found that participants in a task-involving condition exhibited more  
575 persistence in practicing a task at a difficult level. In the current study, it was more  
576 difficult to observe effort in the exercise session because it was brief and the emphasis  
577 was on teaching correct technique. Effort would be more evident over time as it could be  
578 observed whether participants are striving to increase their weights on exercises,  
579 complete all sets/ repetitions, exercise regularly, attend sessions, etc.

580 Another useful direction for future research involving motivational climates and  
581 physical activity might include building off the study by Hogue et al. (2013) examining a  
582 physiological change associated with motivational climate. While cortisol can have  
583 detrimental effects both on the physical and mental level, there may be other things going  
584 on physiologically in motivational climates that are important to study such as  
585 inflammatory cytokines. High stress has been shown to disrupt the balance of pro and  
586 anti-inflammatory cytokines in humans (Maes et al., 1998) that has been linked with  
587 fatigue, depressed mood, difficulty maintaining attention, and difficulty in sleep (Suzuki  
588 et al., 2000). As ego-involving motivational climates have been correlated with higher  
589 stress and anxiety levels, it may be that this leads to harmful consequences on a  
590 physiological level as well, so future research will be important to consider these  
591 relationships.

592 In conclusion, results from this study provide a foundation to continue research in  
593 exercise psychology on the benefits of creating a C/TI climate. This specific research  
594 targeted female college students. The college years now may be more critical than ever to  
595 promote physical activity as Chomitz et al. (2012) suggests with decreased physical  
596 education classes in grades K-12, the responsibility to engage young adults in physical  
597 activity may now be placed more so on college and universities. If college students do not  
598 learn to make physical activity part of their regular schedule, it is not likely to happen as  
599 they progress in life and have possible full time jobs and greater family responsibilities.  
600 As habits developed at a younger age tend to continue over time (Barnekow-Bergkvist,  
601 Hedberg, Janlert, & Jansson, 1996)/ Creating C/TI climates may prove to be an

602 important aspect of encouraging college students to adopt healthy active lifestyles that  
603 they continue into their adult years.

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695 Table 1

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697 *Motivational Climate Manipulation*

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Caring/Task Involving	Ego Involving
<p data-bbox="232 602 394 632">Introduction</p> <p data-bbox="232 653 764 961">Thank participants for their interest/ participation and introduce the three lifts they will be learning. Emphasize this is a learning session and the goal is to help develop good technique, give high effort, have fun, and support one another.</p>	<p data-bbox="823 602 985 632">Introduction</p> <p data-bbox="823 653 1378 961">Thank participants for their interest/ participation and introduce the three lifts 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.</p>
<p data-bbox="232 987 375 1016">Icebreaker</p> <p data-bbox="232 1037 781 1234">Two Truths and A Lie: Participants each told the group two truths and a lie about themselves and everyone had to guess which were the truths and which was a lie.</p>	<p data-bbox="823 987 959 1016">Icebreaker</p> <p data-bbox="823 1037 1352 1182">Glory Days: Group members took turns introducing themselves and talking about their greatest sport accomplishment.</p>
<p data-bbox="232 1260 591 1289">Weight Training Activities:</p> <p data-bbox="232 1310 761 1455">Dumb Bell Bench Press, Standing Dumb Bell Bicep Curl, Seated Overhead Dumb Bell Press</p> <p data-bbox="232 1476 792 1841">Participants were given technical instruction; their high effort and improvement were noted. Competition was not emphasized and confederates were supportive of each other and the true participant. First names were used often and the instructor treated each participant</p>	<p data-bbox="823 1260 1175 1289">Weight Training Activities:</p> <p data-bbox="823 1310 1347 1455">Dumb Bell Bench Press, Standing Dumb Bell Bicep Curl, Seated Overhead Dumb Bell Press</p> <p data-bbox="823 1476 1378 1841">Participants were rated on their form for each exercise and scores were displayed on a white board. Competition was emphasized and the participant with the best form was given the most attention/praise. In addition, mistakes were punished with frustrating and negative</p>

with kindness and respect.	comments from the instructor.

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702 Table 2

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704 *Means, Standard Deviations, and Cronbach's alpha levels of Pre and Post Exercise*705 *Session Enjoyment, and Effort and Motivational Climate with Additional Five Items Post*706 *Session*

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MOTIVATIONAL CLIMATE			
	<u>Caring/Task Group</u>	<u>Ego Group</u>	
	Means (SD)	Means (SD)	Cronbach's alpha
Caring *	4.91 (.14)	1.85 (.58)	.99
Task *	4.69 (.34)	2.5 (.61)	.97
Ego *	1.54 (.74)	3.98 (.31)	.95
<u>Post Session Variables</u>			
Stress *	1.7 (1.25)	3.5 (1.35)	
Shame *	1.2 (.42)	3.8 (1.03)	
Self-Consciousness *	1.5 (.97)	4 (.94)	
Plan To Continue	3.7 (1.41)	3 (.67)	
Weigh-Training			
Excitement To	3.8 (1.47)	2.5 (.85)	
Continue Weight- Training **			

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*Note. \* p <.01; \*\*p<.05*

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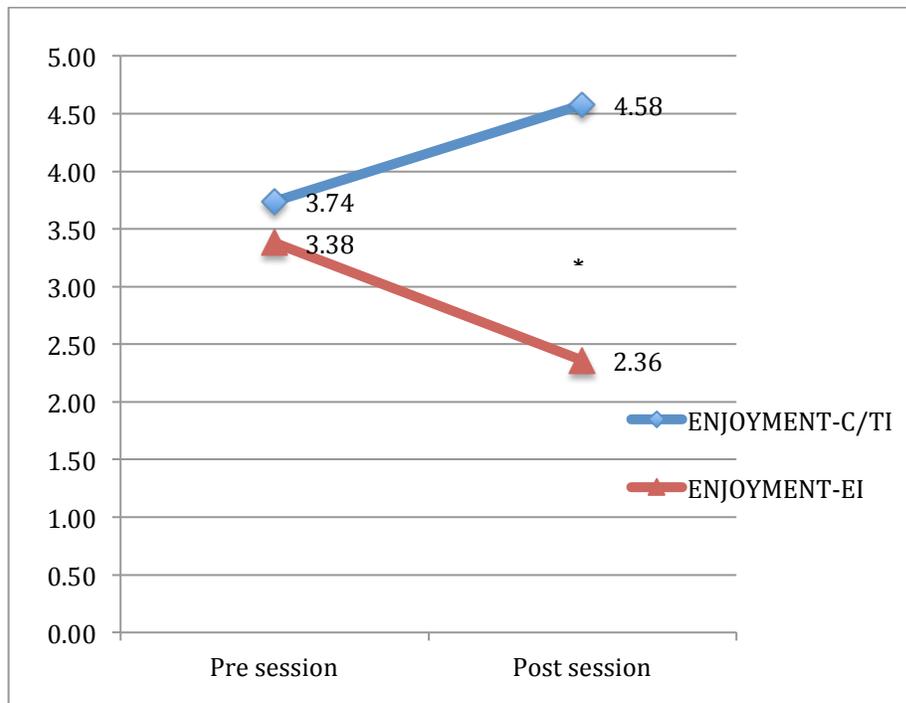
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718 Figure 1

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

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\* $p < .01$ .

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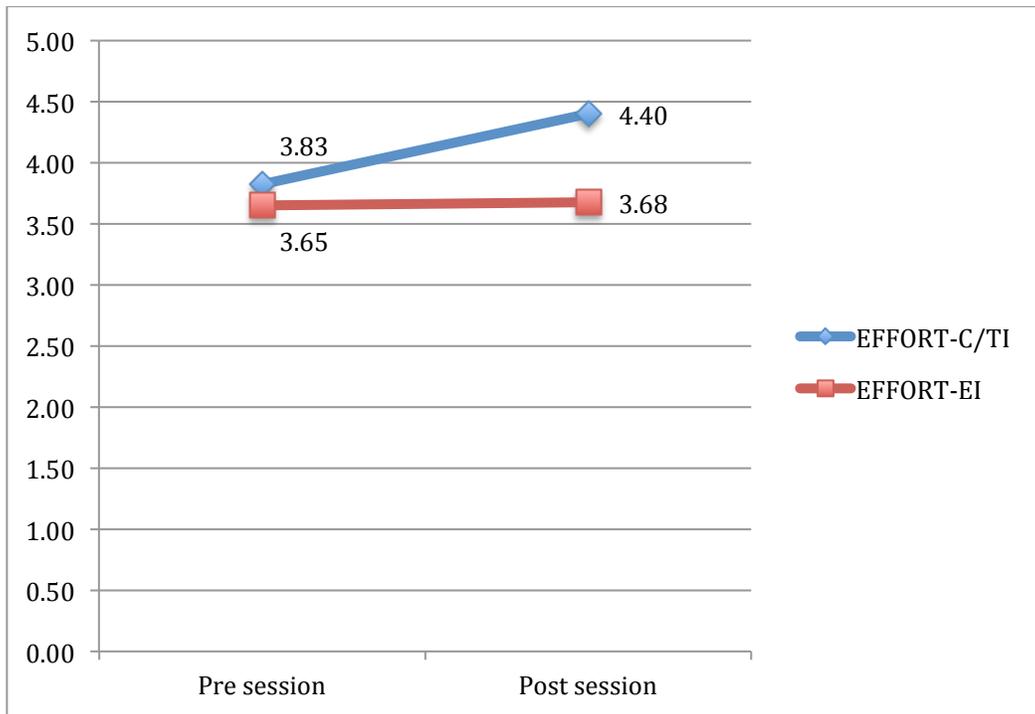
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733 Figure 2

734 *Participants Self-Reported Effort Pre and Post Exercise Session*



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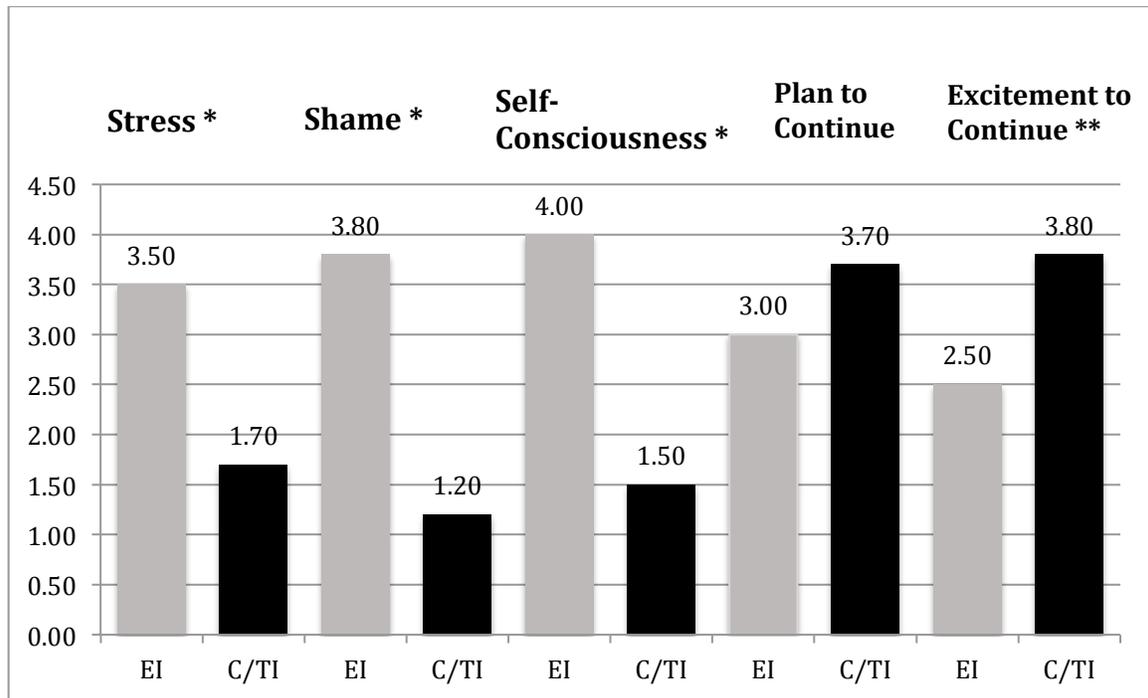
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747 Figure 3

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*Additional Five Items – Post Session*

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750 \* $p < .01$ ; \*\* $p < .05$ . (indicates significant difference between climate groups)

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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:

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

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](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

**Human Subjects Committee Lawrence**  
Youngberg Hall | 2385 Irving Hill Road | Lawrence, KS 66045 | (785) 864-7429 | HSCL@ku.edu | [research.ku.edu](http://research.ku.edu)

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APPENDIX B  
EXTENDED LITERATURE REVIEW

## 821 **Extended Literature Review**

### 822 **Achievement Motivation** 823

824 Findings proclaiming many of the psychological benefits of physical activity are of  
825 no surprise to many, since researchers across the globe have now spent decades studying  
826 the effects of exercise on anxiety, stress, depression, and more. Another aspect of the  
827 literature, not as frequently discussed, is how the motivational climate of physical activity  
828 settings might mediate those effects not only on psychological well-being, but also  
829 physiological health, intrinsic motivation, and effort. The basis for some of this  
830 blossoming research comes from the research by John Nicholls (1984, 1989) on  
831 achievement motivation. Nicholls focused on how conceptions of ability effect how  
832 individuals approach a task. He postulated young children see ability in reference to  
833 themselves and high performance is achieved with effort. For children, having low ability  
834 occurs when individuals give low effort on a task. Young children do not judge their  
835 ability based on whether others can perform the same task. This mindset of seeing ability  
836 only in reference to the self, Nicholls calls task-involvement. In this state, people are  
837 focused on mastery of a skill and improvement overtime with a less external perspective  
838 of self. As children age, Nicholls argues, levels of differentiation begin to appear in  
839 adolescence in which people can conceive of ability as capacity. That is, ability no longer  
840 is judged solely on individual effort and improvement but rather capacity relative to  
841 others. When individuals develop a differentiated conception of ability they only feel  
842 successful when they outperform others or perform equally to others with less effort.  
843 Nicholls calls this concern with performance in relation to others an ego-involved state.

844 Around the age children obtain the capacity to employ a differentiated conception

845 of ability they can choose to define success based on personal effort and improvement  
846 (task-involving) and/or their performance in comparison to others (ego-involving). These  
847 personal definitions of success are referred to as goal orientations. Those who are task  
848 involved exhibit high effort to achieve mastery. They are not concerned with  
849 performance in relation to others but only in achieving personal bests. Task-involved  
850 individuals view effort as leading to mastery and higher ability. Ego involved individuals  
851 are most concerned with mastery as a way to serve their ends; showing higher capacity  
852 than others.

### 853 **Task-Involving Motivational Climate**

854       According to Nicholls (1984), in achievement settings individuals can focus on  
855 their personal effort and ability (i.e., be task-involved) or their performance in  
856 comparison to others (i.e., be ego-involved). He suggests important factors such as  
857 situational environment can impact individuals' personal definitions of success as well as  
858 their cognitive, affective, and behavioral responses in achievement settings. These ideas  
859 have been applied to research pertaining to motivational climates in sport and physical  
860 activity settings. Research on the benefits of task-involving motivational climates report  
861 positive influences on the physiological level, psychological level, and team level in  
862 sport. When individuals perceive a task-involving motivational climate in a physical  
863 activity setting they are more likely to experience benefits such as enjoyment, more  
864 intrinsic motivation, and more positive mood states (Brown, Fry, & Little, 2013;  
865 Huddleston, Fry,& Brown, 2012), and better team cohesion in group sport (Heuze,  
866 Sarrazin, Masiero, Raimbault. & Thomas, 2006). Questionnaires such as the Perceived  
867 Motivational Climate in Sport Questionnaire (Seifriz, Duda, & Chi, 1992), Perceived

868 Motivational Climate in Sport-2 Questionnaire (Newton, Duda, & Zin, 2000) and  
869 Perceived Motivational Climate in Exercise Questionnaire (Brown et al., 2013) have all  
870 been developed to assess motivational climate in sport and exercise settings in research.

871 Huddleston, Fry, and Brown (2012) examined the relationship of employees'  
872 perceived motivational climate and aspects of intrinsic motivation in a corporate fitness  
873 facility. They found those members who perceived a higher task involving climate were  
874 more likely to report more interest and enjoyment, perceived competence, and higher  
875 effort/importance in relation to exercise than those perceiving an ego involving. Similar  
876 research has been carried out in a sport setting as well. Seifriz, Duda, and Chi (1992)  
877 surveyed male high school basketball players to examine the relationship between  
878 perceived motivational climate on intrinsic motivation and views on effort. The players  
879 who perceived a mastery (task) involving climate reported higher levels of enjoyment in  
880 comparison to athletes who perceived their team climates were low in mastery  
881 orientation. Additionally, those players who perceived a high mastery involving climate  
882 reported higher levels of intrinsic motivation. Results also revealed those athletes who  
883 perceived a high mastery involving climate were more likely to believe effort leads to  
884 success, whereas players perceiving a high performance (ego) involving climate were  
885 more likely to believe ability leads to success. This finding is exactly in line with  
886 Nicholls previously mentioned ideas arguing task involvement leads to individuals  
887 valuing high effort. This may be true, because task-involved individuals believe their  
888 efforts can lead to success, whereas ego-involved individuals view success in relation to  
889 performance of others. If ego involved individuals do not believe they have the ability to  
890 do better than others they may find no justification for effort, and may not exhibit high

891 effort. For coaches and fitness instructors, this is especially pertinent, as they likely want  
892 their team or client to exhibit high effort in pursuing a health, fitness, or performance  
893 goal.

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

909         Less research has explored the relationship of perceptions of motivational climates  
910 to individual physiological responses. Hogue, Fry, Fry, and Pressman (2013) recently  
911 created controlled task and ego-involving conditions for students learning how to juggle,  
912 similar to Solomon's study (1996), but they set out to also assess physiological effects of  
913 task- and ego- involving motivational climates. Using cortisol (a hormone released during

914 stress) levels to measure stress responses, researchers found that participants in an ego-  
915 involving climate experienced higher levels of cortisol than those who learned to juggle  
916 in a caring/task-involving climate. Additional factors such as anxiety and self-confidence  
917 were also analyzed in relation to motivational climate. Findings provided further support  
918 for the benefits of a task involved motivational climate. Cortisol levels of those in the  
919 caring/task-involving group actually decreased below baseline. Additionally, the  
920 caring/task-involving group also had no significant increase in cognitive and somatic  
921 anxiety but did have increased self-confidence.

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

931         In a similar vein, research also tends to support the positive effect of task involving  
932 motivational climates for team sports in relation to cohesion and collective efficacy.

933 Heuze, Sarrazin, Masiero, Raimbault, and Thomas (2006) demonstrated a positive link  
934 between a task-involving motivational climate to group integration (cohesion) and team  
935 collective efficacy in elite female teams.

936 **Ego-Involving Motivational Climate**

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

952           Another interesting aspect of the study included intention to continue juggling, as  
953 the ego-involving group reported less intent to continue juggling. This information is  
954 specifically notable for those working on physical activity initiatives within a population.  
955 If individuals perceive an ego-involving climate in a physical activity setting they may be  
956 less likely to adhere to recommended activity levels. Additionally, for sport coaches and  
957 fitness instructors, the negative physiological effects of an EI climate may be worth of  
958 consideration. If coaches want their players' heads in the game, or fitness professionals  
959 want their clients focused on learning new exercise techniques, then decreased cognitive

960 ability as a result of heightened cortisol does not seem advantageous.

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

971         Another interesting aspect of the research involving motivational climate in sport  
972 pertains to the effect of climate on psychobiosocial states. Bortoli, Bertello, and Robozza  
973 (2009) used a 14-item scale with 7 pleasant and 7 unpleasant states pertaining to the  
974 psychobiosocial constructs (emotion, cognition, motivation, bodily reaction, movement,  
975 performance, and communication) to study the relationship of dispositional goal  
976 orientations, motivational climate and psychobiosocial states in youth sport participants.  
977 Among a multitude of relationships, ones relating to a performance (ego) motivational  
978 climate emerged with performance climate being positively related to most unpleasant  
979 states, except movement and communication. Further research of a similar nature by  
980 some of the same authors added competence (perceived and actual) into the mix of  
981 constructs. Bortoli, Bertollo, Comani, and Robazza (2010) concluded that when youth  
982 have a high task orientation, low perceptions of competence, and perceive a high

983 performance (ego) climate in sport it is detrimental to young athletes. Additionally, youth  
984 high in task orientation with high perceived competence exhibited low levels of pleasant  
985 psychobiosocial states when placed in a performance oriented climate. Research relating  
986 to motivational climate and psychobiosocial states seems to point to various relationships  
987 between ego-involving climate in sport and either high scores on unpleasant states scales,  
988 or low scores on pleasant state scales. With the development of the psychobiosocial  
989 measure, researchers further added to the case for detrimental effects of an ego-involving  
990 climate in sport.

991         Fitness instructors are a specific population aside from coaches who might benefit  
992 from knowledge of task- and ego-involving motivational climates in physical activity. If  
993 the goal of fitness instructors for their clients is enjoyment and adherence to a physical  
994 activity regimen then research suggests creating an ego involved motivation climate as  
995 counterproductive. Harju, Twiddy, Cope, Eppler, and McCammon (2003) conducted a  
996 study examining performance and mastery goals of women at a fitness center and their  
997 preferred style of motivation by fitness instructors. In this context of group exercise, none  
998 of the groups' preferred instructors placed emphasis on performance. Results suggest  
999 fitness instructors should engage in encouragement and place greater emphasis on  
1000 teaching towards improvement, instead of pressuring individuals to perform to external  
1001 standards.

1002         Contents of one review of motivational climate in physical activity provides  
1003 additional evidence of the negative consequences of ego-involving motivational climates.  
1004 Ntoumanis and Biddle (1999) examined fourteen studies relating to motivational climate  
1005 and physical activity. Results, supported by accumulating effect sizes over all studies

1006 pointed towards the simple conclusion that ego-involving instructions given in physical  
1007 activity settings lead to an increased likelihood of individuals to exhibit maladaptive  
1008 behavioral patterns such as increased stress, worry and focus on ability in comparison to  
1009 others. The researchers reached this conclusion taking into account studies pertaining to  
1010 short and long term interventions on motivational climate in sport, school physical  
1011 education, and exercise.

### 1012 **Caring Climate**

1013 Task and ego involving motivational climates have received extensive attention in  
1014 physical activity literature for almost three decades. Only in the last decade though has a  
1015 new focus emerged with research into experiences of individuals in sport and physical  
1016 activity settings in relation to a perceived caring climate. While the ideas of caring  
1017 climates are certainly nothing new, only in 2007 was a scale for measuring perceived  
1018 caring climate in physical activity developed (Newton et al., 2007). Developers of the  
1019 scale were greatly influenced by Nel Noddings (1984). Noddings' ideas emphasized that  
1020 caring entails paying attention with engrossment i.e., trying to experience another's frame  
1021 of reference with an open mind. Another construct of caring on which Noddings' works  
1022 placed importance was promoting progress for the cared for first, instead of satisfying  
1023 one's own need. Her caring framework was focused through the lens of education  
1024 hypothesizing that through listening, accepting, sympathizing and helping people in an  
1025 educational environment individuals will develop an enjoyment for learning.

1026 The caring climate scale was developed to "assesses the extent to which individuals  
1027 consistently perceive a particular setting to be interpersonally inviting, safe, supportive,  
1028 and able to provide the experience of being valued and respected." (Newton et al., 2007,

1029 p. 72). While scores on the task-involving climate and caring climate scales were shown  
1030 to have a positive correlation during development of the caring climate scale, the shared  
1031 variance of caring and task-involving climates was small enough to suggest justification  
1032 of the caring climate as a distinct entity for research purposes. This scale was shown to  
1033 have validity specifically in physical activity settings.

1034 In a similar fashion as a task-involving motivational climate, creating a caring  
1035 climate in sport and exercise has been correlated with higher levels of planned  
1036 continuance of an activity, commitment, enjoyment, psychological well-being, and more.  
1037 Due to their similarity, measurement of caring and task-involving climates have been  
1038 examined together in exercise psychology research. In the mentioned research by Hogue  
1039 et al. (2013) instructors teaching participants to juggle in a task-involving session were  
1040 trained to also utilize the theoretical framework within the caring climate in physical  
1041 activity scale to creating a caring/task-involving climate in conjunction with each other.  
1042 The findings in the research included the caring/task-involving group reporting  
1043 significantly more enjoyment/effort as well as less anxiety than the ego-involving group.  
1044 Participants' perceptions of a caring/task-involving climate in physical activity settings  
1045 have been associated with higher intrinsic motivation and commitment to exercise than  
1046 those who perceive an ego-involving climate. (Brown & Fry, 2013). Additionally, Moore  
1047 and Fry (2014) found perceptions of a caring and task-involving climate were positively  
1048 related to exercise ownership (participants' feelings of having a positive influence over  
1049 their own and exercise groups' experience) and empowerment (ability to reach  
1050 health/fitness goals through exercise) and negatively related to perceptions of an ego-  
1051 involving climate.

1052 Much of the research involving specifically caring climate is focused within youth  
1053 sport participation. This may be due to the nature of the positive effects of a caring  
1054 climate and how it may help in healthy physical and psychological development for  
1055 youth. Newton, Watson, Gano-Overway, Fry, Kim, & Magyar (2007) studied effects of a  
1056 caring based intervention on physical activity for youth involved in two National Youth  
1057 Sports Programs. One program followed an agenda with staff trained in emphasizing  
1058 themes of caring while the other followed the normal training protocol for the sport  
1059 program. As hypothesized, the participants in the intervention group perceived a higher  
1060 level of caring climate. The researchers also found the traditional group perceived a  
1061 higher ego involving climate than the caring group. Also, the children in the caring group  
1062 were more likely to say they planned to be involved with the program the following year.  
1063 Another interesting finding was the traditional group showed lower levels of empathy  
1064 than the caring group.

1065 A study by some of the same authors examined the relationship between youth  
1066 soccer players' caring climate perceptions and enjoyment, caring behaviors, attitudes and  
1067 behaviors towards coaches/teammates, as well as commitment to the sport (Fry & Gano-  
1068 Overway, 2010). The findings revealed the strongest correlations with caring climate  
1069 were in a positive direction with attitude towards coaches, enjoyment, and commitment to  
1070 playing soccer. Among other pertinent findings, enjoyment was positively correlated with  
1071 continued soccer involvement. It seems that, at least for youth, enjoyment of sport might  
1072 lead to continued involvement, which can be an ultimate outcome of creating a caring  
1073 climate.

1074 Fry, Kim, Gano-Overway, Guivernau, Newton, and Magyar (2012) examined the

1075 relationship between affective self-regulatory efficacy, perceived caring climate, and  
1076 emotional well-being using a sample of youth sport participants. Specifically, the  
1077 researchers wanted to understand if individuals' perception of a caring climate is  
1078 mediated by their perceived ability to regulate positive and negative emotions, and if that  
1079 in turn would predict components of psychological well-being such as hope, happiness,  
1080 depression, and sadness. Data analysis revealed interesting findings across all variables.  
1081 Perceptions of a caring climate were positively associated with self-efficacy for both  
1082 positive and negative emotions, and all three variables had positive associations for hope  
1083 and happiness, as well as negative associations with depression and sadness. Data from  
1084 the mediating effect of emotional regulation self-efficacy on the path of caring climate to  
1085 psychological well-being revealed, simply, that one route through which caring climate  
1086 influences youngsters' psychological well-being is through building their efficacy for  
1087 emotion regulation. Essentially, in caring climates it seems youth are able to better deal  
1088 with and express their positive and negative emotions, which benefits their psychological  
1089 well-being. The authors hypothesize that a caring climate might lead individuals to feel  
1090 less afraid of involving themselves in an activity, in turn leading to more interaction with  
1091 others and feeling comfortable in expressing and dealing with their emotions  
1092 appropriately among peers. While this hypothesis still needs further testing, the findings  
1093 of the study do reveal how a caring climate in sport can positively impact youth  
1094 participants' psychological well-being in relation to the activity. This has important  
1095 implications promoting the use of caring climates in youth sport activities.

#### 1096 **Creating Task and Caring Climates**

1097 The research outlining some positive effects of task and caring motivational

1098 climates are important additions to literature, but what is equally important is  
1099 understanding how interventionists can create climates that are perceived as high in task  
1100 and caring in physical activity settings. Unfortunately, there is not much research  
1101 outlining specifically how to create caring/task involving climates. One article of note by  
1102 Brown and Fry (2011) outlined specific strategies for creating a task involving/caring  
1103 climate in a fitness center. They commented on the importance of targeting all different  
1104 types of employees to create the desired motivational climate.

1105         Front desk clerks, membership representatives, group fitness instructors,  
1106 supervisors and all other staff need to be on board to influence the exercise experience of  
1107 members (Brown & Fry, 2011). Themes of creating a task/caring involving climate in a  
1108 fitness facility applicable to all employees include warm greetings, learning names when  
1109 possible, and being willing to answer questions. Additionally, the researchers suggest  
1110 membership coordinators simply engage new members to talk about their goals and  
1111 interests to foster feelings of being valued by members. Employees who work in  
1112 membership can know which fitness instructors a member might mesh well with by  
1113 simply gauging what they are looking for in the fitness facility. This may lead gym  
1114 patrons to feel more understood and important to facility staff.

1115         Group fitness instructors and personal trainers can follow similar guidelines to  
1116 increase physical activity enjoyment and adherence by club members. Trainers and  
1117 fitness instructors can have an impact, as Brown and Fry state (2011, p. 75), simply  
1118 “through the use of certain language when explaining moves or demonstrating levels of  
1119 equipment. For example, rather than describing the green exercise band as “the easiest,”  
1120 instructors can introduce the band as “option one, appropriate if you are new to this type

1121 of equipment.” Such language targets the task-involving construct of focusing on  
1122 personal mastery as opposed to external normative comparison. Fitness instructors and  
1123 trainers should also attempt to focus on process goals instead of outcome goals.  
1124 Specifically, focusing on the little steps that lead to change and emphasizing more  
1125 intrinsic rewards of exercise such as more energy, and enhanced feelings of well-being is  
1126 more likely to promote adherence and enjoyment. With additional focus on effort and  
1127 improvement instead of, for example, the exact amount of weight loss in a given time  
1128 frame, fitness professionals can create a more task-involving climate.

1129 Supervisors of fitness facilities also play an integral role in positive climate  
1130 creations. Brown and Fry (2011) note supervisors need to create a caring climate for the  
1131 staff as well, making them feel valued so they are more willing to help members feel  
1132 valued. Supervisors who take part in the hiring process must also be attentive to possible  
1133 employees who seem to be receptive to the constructs of a task/caring climate, or who  
1134 may exemplify them already on their own. Training seminars teaching employees about  
1135 how to create a caring and task-involving climate for employees might also be of special  
1136 interest to supervisors.

1137 The research, through examining the constructs of a task-involving and caring  
1138 climate does paint a picture of what needs to be done to create those climates in sport and  
1139 physical activity settings. In addition, by looking at the topical ideas that make up the  
1140 Perceived Motivational Climate in Sport Questionnaire (PMCSQ), Perceived  
1141 Motivational Climate in Sport-2 Questionnaire (PCMSQ-2), Perceived Motivational  
1142 Climate in Exercise Questionnaire (PMCEQ), and Caring Climate Scale (CCS) one can  
1143 gather ideas of how to create caring and task-involving climates in sport and physical

1144 activity settings. It seems the constructs measured in the scales include perceptions of  
1145 cooperative learning, effort/improvement, punishment for mistakes, feeling valued, and  
1146 more. Essentially in any physical activity setting stressing cooperation, recognizing and  
1147 fostering the importance of effort and improvement without external comparison, and  
1148 making participants feel valued and supported, is important when trying to create a task-  
1149 involving and caring climate.

### 1150 **Directions for Future Research and Conclusions**

1151 Research relating to motivational climate and effort in physical activity using  
1152 somewhat objective measures as opposed to self-report measures within existing research  
1153 is lacking. Solomon (1996) used a more objective measure of persistence of students in a  
1154 physical education setting when learning a difficult task. Future more objective research  
1155 in sport or fitness facilities might reveal similar results as Solomon who found that  
1156 participants in a task-involving condition exhibited more persistence in practicing a task  
1157 at a difficult level.

1158 Solomon's (1996) approach to measure the persistence of students in a physical  
1159 education setting when learning a difficult task was an interesting step worthy of further  
1160 consideration. She actually recorded observed persistence in learning to juggle with  
1161 students in a task-involving climate. Hogue et al. (2013) also noted instructors and  
1162 confederates in a study unanimously agreed participants in the caring/task-involving  
1163 climate gave more effort when learning to juggle than participants in the ego-involving  
1164 climate. Along with higher observed effort in a caring/task-involving, Hogue et al. (2013)  
1165 found a caring/task-involving motivational climate in physical activity lead to increased  
1166 effort via self-report measures (Hogue et al., 2013). Noteworthy advances in the field of

1167 neuromechanics has led to the possibility for those working in exercise psychology to  
1168 quantify effort. The Interpolated Twitch method offers an interesting avenue by which  
1169 actual effort can be quantified via measurement of muscle activation and force  
1170 production. Twitch interpolation involves measurement of the motoneuron drive to a  
1171 muscle and the translation into force (Taylor, 2009). Additionally, the method involves  
1172 imposing a stimulus to the peripheral nerve during a voluntary muscle contraction.  
1173 Theoretically, the stimulus will recruit all possible muscle motor units to create an  
1174 increase in force referred to as superimposed action potential of the muscle (Herbert &  
1175 Gandevia, 1999). The interpolated twitch is a momentary spike of force due to evoked  
1176 activation of all potential muscular motor units. Both potential voluntary force and  
1177 evoked force can be measured. They can then be compared for calculation of percent  
1178 voluntary inactivation (Behm, Power, & Drinkwater, 2001). While self-reported effort in  
1179 relation to motivational climate is an important marker of what might lead to maximal  
1180 effort in sport and exercise, thus far there has not been any attempt to objectively measure  
1181 effort levels.

1182         The ITT has been used extensively in research related to neuromuscular function  
1183 and variables effecting muscle activation. One study considered the effect of caffeine on  
1184 muscular function (Kalmar & Cafareli, 1999). Researchers utilized the ITT among other  
1185 tests to determine caffeine's effect on muscle activation of the knee extensors. They  
1186 found after administration of caffeine to subjects they showed increased muscle  
1187 activation and increased time to fatigue. Another interesting use of the ITT in research  
1188 was to determine how different forms of stretching affect strength. Fowles and  
1189 McDougall (2000) examined particularly passive stretching and strength. They had study

1190 participants perform 30 minutes of passive plantar flexor stretches. Using the ITT  
1191 researchers found prolonged stretching of the muscle decreased voluntary strength for up  
1192 to one hour post stretch. Age related changes in neuromuscular function have (Mau-  
1193 Moeller, Martin, Lindner, Bader, & Bruhn, 2013) been found using the ITT method and  
1194 other neuromuscular tests (H-Reflex and EMG) to examine mechanisms of decreased  
1195 voluntary muscle activation and explosive strength in the elderly. Other research of note  
1196 by Folland, Hass, and Castle (2011) examined muscle activation and voluntary strength  
1197 of Parkinson's disease patients on and off medication. They found patients on medication  
1198 had reduced muscle activation and reduced knee extension strength. Motivational  
1199 climate, specifically caring/task-involving and ego-involving climates might prove  
1200 another variable affecting voluntary muscular activation and consequently, strength.  
1201 Findings could be of particular interest to athletic trainers and coaches who may find that  
1202 in order to get the performance they desire from athletes, they should ironically create a  
1203 task-involving climate not actually stressing performance. Additionally, personal trainers,  
1204 group fitness instructors, physical therapists, and those in health professions involving  
1205 physical activity who may want to increase effort from a targeted person/persons might  
1206 be particularly interested in what types of motivation will elicit high effort.

1207         Additionally, much of the research involving motivational climates seems to focus  
1208 on youth and young adults. While this is certainly an important population to consider,  
1209 there seems to be an obvious slant of research focusing on these populations. It might be  
1210 interesting for future research to examine how adults approaching middle age and older  
1211 respond to different motivational climates in physical activity. The mentioned research by  
1212 Huddleston, Fry, and Brown (2011) regarding motivation climate in a corporate fitness

1213 facility is a step in that direction. It is just as important to examine possible ways to  
1214 encourage adult physical activity as it is for youth and young adults. As, Harjue et al.  
1215 (2003) found, members of a gym taking fitness classes did not prefer instructors that  
1216 focused on performance, an ego-involving climate construct. More research with adult  
1217 populations reporting the positive effects of a caring and task-involving climate might  
1218 change the way personal trainers, fitness instructors, or organizers of adult sport leagues  
1219 approach physical activity.

1220         Another useful direction for future research involving motivational climates and  
1221 physical activity might include building off the study by Hogue et al. (2013) examining a  
1222 physiological change associated with motivational climate. While, as pointed out in the  
1223 research, cortisol can have detrimental effects both on the physical and mental level,  
1224 there may be other things going on physiologically in motivational climates worth  
1225 studying. High stress has been shown to disrupt the balance of pro and anti-inflammatory  
1226 cytokines in humans (Maes et al., 1998) that has been linked with fatigue, depressed  
1227 mood, difficulty maintaining attention, and difficulty sleeping (Suzuki et al., 2000). If  
1228 ego-involving motivational climates have been correlated with higher stress and anxiety  
1229 levels, this is likely causing unwanted consequences on a physiological level as well.

1230         Across the board, research seems to outline extensively the positive effects of task-  
1231 involving and caring motivational climates on effort, enjoyment, intrinsic motivation and  
1232 more ego-involving motivational climates are correlated with higher stress levels, less  
1233 effort, more shame, more self-consciousness, less intrinsic motivation, lowered self-  
1234 efficacy and more. The more research promoting task and caring climates in physical  
1235 activity settings, the more likely professionals in sport and exercise may be to shift their

1236 focus to encouraging high effort and improvement as opposed to winning or  
1237 outperforming others. With this shift may come more enjoyment and adherence to regular  
1238 physical activity with increased effort level and decreased psychological stress, leading to  
1239 individuals adopting healthier lifestyles in society through sport and exercise.  
1240

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APPENDIX C  
QUESTIONNAIRES

*Pre Questionnaires*

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1357 Name:

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1359 Ethnicity (Circle One):

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1361 Caucasian/White African American/Black Native American Asian/pacific islander  
1362 Hispanic/Latino

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1364 Multiple Other

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1366 Student Status (Circle One):

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1368 Freshman Sophomore Junior Senior Graduate Student

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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.		Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree
1	I usually put a lot of effort into physical activities.	1	2	3	4	5
2	It is important for me to do well when I do physical.	1	2	3	4	5
3	I usually try hard during physical activities.	1	2	3	4	5
4	I usually do not try very hard during physical.	1	2	3	4	5

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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.		Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree
1)	I usually find learning new physical activities interesting.	1	2	3	4	5
2)	I usually have fun when I learn new physical activity skills.	1	2	3	4	5
3)	I usually get involved when I'm doing new physical activities.	1	2	3	4	5
4)	I usually enjoy trying new physical activities.	1	2	3	4	5
5)	I usually find time flies when trying new physical activities.	1	2	3	4	5

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*Post Questionnaires*

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.	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree
1 I usually find learning new physical activities interesting.	1	2	3	4	5
2 I usually have fun when I learn new physical activity skills.	1	2	3	4	5
3 I usually get involved when I'm doing new physical activities.	1	2	3	4	5
4 I usually enjoy trying new physical activities.	1	2	3	4	5
5 I usually find time flies when I'm trying new physical activities.	1	2	3	4	5

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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.	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree
1) In this training session, the instructor encouraged us to try new exercises/skills.	1	2	3	4	5
2) In this training session, participants were hesitant/embarrassed to ask the instructor or other participants for help.	1	2	3	4	5
3) In this training session, the instructor gave most of her attention to only a few students.	1	2	3	4	5
4) In this training session, participants of all fitness levels were made to feel valued.	1	2	3	4	5
5) In this training session, the instructor praised participants only when they did better than other participants.	1	2	3	4	5
6) In this training session, participants felt embarrassed if they did not know how to use the equipment or perform the exercise/skill/drill/activity.	1	2	3	4	5
7) In this training session, participants felt good when they tried their best.	1	2	3	4	5
8) In this training session, participants felt welcome.	1	2	3	4	5
9) In this training session, participants helped each other learn.	1	2	3	4	5

		Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree
10)	In this training session, participants were encouraged to do better than others.	1	2	3	4	5
11)	In this training session, the instructor had his/her favorite participants.	1	2	3	4	5
12)	In this training session, the instructor encouraged participants to improve on skills they are good at.	1	2	3	4	5
13)	In this training session, participants felt successful when they improved.	1	2	3	4	5
14)	In this training session, only a few participants got praised.	1	2	3	4	5
15)	In this training session, trying hard was rewarded.	1	2	3	4	5
16)	In this training session, the instructor encouraged participants to help each other.	1	2	3	4	5
17)	In this training session, the instructor made it clear who she thought the most fit and/or most skilled participants were.	1	2	3	4	5
18)	In this training session, participants were excited when they did better than others.	1	2	3	4	5
19)	Only fit/skilled students participated in the training session.	1	2	3	4	5
20)	In this training session, the instructor emphasized always trying your best.	1	2	3	4	5
21)	In this training session, the instructor only noticed a few participants.	1	2	3	4	5
22)	In this training session, participants were afraid to make mistakes.	1	2	3	4	5
23)	In this training session, participants were encouraged to work on their weaknesses.	1	2	3	4	5
24)	In this training session, the instructor favored some participants over others.	1	2	3	4	5
25)	In this training session, the focus was to keep improving on each exercise/skill/activity.	1	2	3	4	5
26)	In this training session, participants really "worked together" as a team.	1	2	3	4	5
27)	In this training session, participants helped each other get better and excel.	1	2	3	4	5

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.		Disagree	Disagree	Not Sure	Agree	Strongly Agree
1	During the session, participants were treated with respect.	1	2	3	4	5
2	During the session, the instructor respected the participants.	1	2	3	4	5
3	During the session, the instructor was kind to the participants.	1	2	3	4	5
4	During the session, the instructor cared about the participants.	1	2	3	4	5
5	During the session, participants felt that they were treated fairly.	1	2	3	4	5
6	During the session, the instructor tried to help participants.	1	2	3	4	5
7	During the session, the instructor wanted to get to know all the participants.	1	2	3	4	5
8	During the session, the instructor listened to participants.	1	2	3	4	5
9	During the session, participants liked one another for who they were.	1	2	3	4	5
10	During the session, the instructor accepted participants for who they were.	1	2	3	4	5
11	During the session, participants felt comfortable.	1	2	3	4	5
12	During the session, participants felt safe.	1	2	3	4	5
13	During the session, participants felt welcome.	1	2	3	4	5

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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.		Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree
1	I put a lot of effort into learning weight training	1	2	3	4	5
2	It was important to me to do well during the	1	2	3	4	5
3	I tried very hard during the training session.	1	2	3	4	5
4	I did not try very hard during the training session.	1	2	3	4	5

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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.		Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree
1)	I found the training session interesting.	1	2	3	4	5
2)	I had fun during the training session.	1	2	3	4	5
3)	I felt I got involved during the training session.	1	2	3	4	5
4)	I enjoyed the training session activities.	1	2	3	4	5
5)	I found time flew by during the training session.	1	2	3	4	5

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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.	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree
1. This training session was stressful.	1	2	3	4	5
2. At times, I felt shame during the training session.	1	2	3	4	5
3. I felt self-conscious during the weight training session.	1	2	3	4	5
4. I plan on continuing to practice weight training.	1	2	3	4	5
5. I am excited to continue weight training.	1	2	3	4	5

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