THE EFFECTS OF A PSYCHOSOCIAL ENVIRONMENT ON COLLEGE WOMEN’S EXERCISE
REGULATIONS AND SOCIAL PHYSIQUE ANXIETY

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A positive psychosocial intervention comprised of high autonomy support, task-involvement, and caring was implemented in physical activity classes to examine its effects on college women’s basic psychological needs (i.e. autonomy, competence, relatedness), exercise regulations (i.e. external, introjected, identified, integrated, intrinsic) and social physique anxiety (SPA). We hypothesized that at the end of the semester, participants in the intervention group (N = 73) would report greater need satisfaction, more self-determined regulations and less SPA than participants in the non-intervention group (N = 60). At T1 and T2, both the intervention and non-intervention participants reported “agreeing” with experiencing an autonomy supportive, task-involving, and caring environment. Furthermore, both groups at T1 and T2 reported moderate SPA. No significant group differences were found at T1. At T2, significant group differences were observed in the intervention and non-intervention groups’ report of external regulation and intrinsic regulation. The results suggests that group exercise instructors are capable of creating a positive psychosocial environment to enhance students’ intrinsic motivation.
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THE EFFECTS OF A PSYCHOSOCIAL ENVIRONMENT OF COLLEGE WOMEN’S EXERCISE REGULATIONS AND SOCIAL PHYSIQUE ANXIETY

Introduction

Exercise has been shown to have both physical and psychological benefits. Body fat, cancers, anxiety, and depression can be reduced with regular participation in exercise (Lox, Martin Ginis, & Petruzello, 2010). Despite these well-known physical and psychological benefits of regular exercise, recent data from the American College Health Association (2013) showed that only 9% of college age women (i.e., 18-24 years of age) participate in the recommended weekly amount of at least 150 minutes of moderate level aerobic activity (U.S. Department of Health and Human Services, 2008). The college years are an important and opportune time for women to develop healthy lifestyle habits, including regular exercise (American College Health Association, 2013). With such a small percentage of women exercising, further investigation is needed to understand why this occurs and how fitness professionals in applied settings can better help young women. Although exercise has been associated with positive outcomes, it may also heighten awareness of one’s body, which can sometimes have a negative effect on one’s body image. Body image disturbances, such as social physique anxiety, have been shown to influence exercise motivation and behaviors (Lox et al., 2010).

Social physique anxiety (SPA) is defined as “a subtype of social anxiety that occurs as a result of the prospect or presence of interpersonal evaluation involving one’s physique” (Hart, Leary, & Rejeski, 1989, p. 96). SPA involves impression management and striving to make a favorable impression on others. SPA can be controlling and affect exercise participation. Gender differences reveal that women, who are heavily influenced by media and culture to attain an
ideal body, report higher levels of SPA (Brunet & Sabiston, 2009; Lox et al., 2010). In fact, Brewer and colleagues (2004) found that female participants who reported high SPA in a university aerobics program, preferred to exercise further away from the instructor and wear concealing clothing. Further investigation is needed to understand why there is a low percentage of college women exercising, and why there is a high report of SPA among this population. Therefore, the primary purpose of this thesis was to examine the impact of a semester-long, positive psychosocial environment intervention composed of autonomy support, task-involvement, and caring on college women’s basic psychological needs, exercise regulations, and SPA.

Self-Determination Theory

Self-determination theory (SDT; Deci & Ryan, 1985; Ryan & Deci, 2000) is a framework for examining motivation in several contexts, including exercise. Based upon SDT, individuals’ motivation to exercise falls into one of three broad categories on the SDT continuum: amotivation, extrinsic motivation, or intrinsic motivation. Amotivation is characterized by a lack of interest or desire to participate in activities (Ryan & Deci, 2000). Extrinsic motivation can be fueled by external (e.g., deadlines) or internal pressures (e.g., personal goals, expectations). Intrinsic motivation is when the drive to act comes from interest and enjoyment.

The broad category of extrinsic motivation is further divided into four behavioral regulations: external, introjected, identified, and integrated (Deci & Ryan, 2000). External regulation is the most controlling type of regulation. Demands, deadlines, and rewards are examples of outside pressures that drive people to participate in activities. Introjected regulation is self-controlling and the individual will participate in an activity to avoid shame and
guilt. For example, a college student who exercises at the recreation center after eating a large meal, because she does not want to feel bad for eating a large amount of calories is exercising from an introjected regulation. Identified regulation occurs when the value or importance of an activity is recognized and drives participation. If, after attending a few fitness classes, the young woman in the above example notices that she experiences less stress after each class, she will participate in exercise from an identified regulation, because she values the benefit of being less stressed. Integrated regulation occurs when a behavior becomes part of one’s identity. The student in the above example may, at some point, begin to consider herself an exerciser and synthesize exercise with other aspects of her identity. More self-determined regulations (i.e., identified, integrated intrinsic) are characterized by less internal or external pressures and greater volition (Ryan & Deci, 2000).

SDT also proposes that each person has three basic psychological needs: autonomy, competence, and relatedness (Deci & Ryan, 1985). Autonomy refers to the need to practice one’s free will and make choices for oneself (Deci & Ryan, 1987). Competence is individuals’ need to feel that they can successfully fulfill a task. Relatedness is individuals’ need to feel close to others. The extent to which the basic psychological needs are met influence the type of behavioral regulation one has toward an activity or task, and ultimately, the type of motivation one expresses toward an activity or task (Deci & Flaste, 1995).

To understand how individuals’ basic psychological needs are met and affect motivation in the exercise setting, researchers examined the motivational environment of fitness classes (Edmunds, Ntoumanis, & Duda, 2008). Environments that are autonomy supportive offer options for individuals to choose an activity and involve them in how they would like to carry
out the activity. This environment encourages participants to choose a task of their liking while establishing limits to encourage participants to be responsible (Deci & Flaste, 1995; Deci & Ryan, 1987). For example, an instructor provides two options in an exercise class for a push-up. A level one push-up is a regular push-up, and a level two push-up is a clap push-up. By allowing participants to choose their levels of exercise, they feel influential over their experience; at the same time, structure is maintained in the class. Research has shown that when participants are able to choose an activity or task they are comfortable with, they show greater creativity, interest, and adherence to the activity (Deci & Flaste, 1995; Edmunds et al., 2008).

The effects of an autonomy supportive, well-structured, and interpersonally involving environment at a university recreation center were tested in an intervention study by Edmunds and colleagues (2008). Compared to the control group, participants in the intervention group received greater autonomy support, clearer goals about expectations, and more time, energy, and affection from the instructor. Participants in the intervention group showed a significant linear increase in perceptions of autonomy, support structure, interpersonal involvement, competence, and relatedness (Edmunds et al., 2008). Autonomy need satisfaction positively predicted identified and integrated regulations, and intrinsic motivation at weeks six and ten of the intervention. The intervention group’s attendance was also significantly greater than the control group’s attendance. With careful planning, the instructor was able to implement strategies and techniques to influence the intervention group’s perceptions of the motivational environment as autonomy supportive; thus, their basic psychological needs were satisfied.

How the environment and satisfaction of individuals’ basic psychological needs relates to SPA is just starting to be examined. Quested and Duda (2011) found a negative correlation
between SPA and autonomy support; thus, indicating that an autonomy supportive environment may decrease SPA. This finding calls for further research to investigate how the psychosocial environment is related to SPA.

Achievement Goal Theory

Achievement goal theory (AGT; Nicholls, 1984, 1989) provides two more components of a class’s psychosocial environment—task-involving and ego-involving—that researchers have used to study how individuals’ motivation can be fostered. An environment is said to be task-involving when learning, individual effort, and cooperation with peers are emphasized (Burton & Raedeke, 2008). Research has shown that exercisers who perceived a task-involving environment in their wellness center also reported greater interest, enjoyment, and vigor (Huddleston, Fry, & Brown, 2012). In an ego-involving environment, comparison to others and normative standards, and intra-group rivalry are emphasized (Burton & Raedeke, 2008). Athletes and exercise participants who perceived an ego-involving environment also reported greater anxiety, and less enjoyment and interest (Huddleston et al., 2012; Reinboth & Duda, 2006). In general, a task-involving environment is associated with positive psychological outcomes and an ego-involving environment is associated with negative health outcomes (Huddleston et al., 2012; Reinboth & Duda, 2006).

The characteristics of an autonomy supportive environment and a task-involving environment complement each other. For example, an autonomy supportive environment provides choices for participants to choose an appropriate level of a task to complete; while a task-involving environment encourages the learning and mastery of that overall task. Studies have also shown that a task-involving environment can meet the basic psychological needs
(Alvarez, Balaguer, & Castillo, 2012; Reinboth & Duda, 2006). Alvarez et al. (2012) found significant, positive paths between perceptions of a task-involving environment and participants’ future autonomy, competence, and relatedness. In contrast, an ego-involving environment was shown to negatively impact the basic psychological needs. Specifically, relatedness was negatively affected, because the pressure to outperform others limited the opportunity to get close to peers (Alvarez et al., 2012). SDT posits that when the basic psychological needs are met, greater intrinsic motivation is experienced (Deci & Flaste, 1995). Based on past research a task-involving environment should be emphasized to foster intrinsic motivation and an ego-involving environment should be minimized (Standage, Duda, & Ntoumanis, 2003).

Caring Environment

Recent studies have also examined how the presence of caring can influence exercise behaviors (Larson, 2006; Larson & Silverman, 2005). Caring in the exercise setting extends from Noddings’ (2007) philosophy of teaching with care. A qualitative study by Larson (2006) identified an overarching category named “pay attention to me” (p. 347) which was broken down into three subcategories of behaviors that physical education students perceived as expressive of care: teacher initiated recognition of students, helping students learn, and trusting or respecting students. The three subcategories were made up of the following eleven clusters: showing students how to do a skill, honoring students request, complimenting students, confronting behavior, asking about students health, attending to injured students, allowing test-retakes, motivating students, playing and participating with students during class,
persuading students, and showing concern for students’ future health (Larson, 2006, p. 343-345).

Some characteristics of a task-involving environment are strongly related to clusters of a caring environment. In fact, when testing the Caring Climate Scale, Newton and colleagues (2007) reported a positive correlation between exercise participants’ perceptions of the caring and task-involving environments. Not surprisingly, a negative relationship was found between a caring environment and an ego-involving environment (Newton et al., 2007). The association between task-involving and caring environments should be carefully considered when creating exercise interventions. Caring is a new component of the exercise environment that may shed further light on how exercise instructors’ can influence their participants’ reported exercise regulations, and possibly SPA. Little research has examined a caring environment and exercise regulations and, to the researcher’s knowledge, no research exists examining caring and SPA. However, because of the characteristics of a caring climate, and its relationship with a task-involving environment, a caring environment is expected to positively influence exercise motivation and reduce SPA.

Summary

Although SPA may hinder exercise among college women, a few key findings need further investigation into how exercise class leaders may be able to influence participants’ SPA levels. Autonomy support from a leader occurs when he or she gives choices and takes into account others perspectives (Deci & Flaste, 1995). Quested and Duda (2011) found a significant, negative relationship between autonomy support and SPA among dancers enrolled in full-time dance training. They also found a positive correlation between extrinsic motivation and SPA.
Furthermore, Thøgersen-Ntoumani and Ntoumanis (2007) found autonomy need satisfaction to be a negative predictor of SPA; whereas introjected regulation, a self-imposed controlling regulatory style, positively predicted SPA. Taken together, these two preliminary findings suggest that an autonomy supportive environment may decrease SPA by meeting the basic psychological need of autonomy. This type of environment may also help foster more self-determined regulations. Given that exercise settings emphasize one’s body, and potentially the opportunity of experiencing SPA, the purpose of this thesis was to examine the effects of a positive psychosocial environment intervention composed of autonomy support, task-involvement, and caring on college women’s exercise regulations and SPA throughout a semester.

It was hypothesized that participants in the intervention would report a higher perception of an autonomy supportive, task-involving, and caring environment, and a lower perception of an ego-involving environment compared to the non-intervention group at week thirteen. Second, it was hypothesized that participants in the intervention would report greater satisfaction of their basic psychological needs, more self-determined regulations (i.e. identified, intrinsic), less extrinsic regulations (i.e. external, introjected) and less SPA compared to the non-intervention group at week thirteen.

Method

Participants

Participants were 133 (M_{age} = 21.60, SD = 2.81, N_{intervention} = 73 ) female college students enrolled in undergraduate physical activity courses (i.e., aerobic dance, conditioning, Pilates, Yoga) in a Southwest university in the U.S. There were eight courses, four pre-assigned to be
taught by the intervention instructor and four pre-assigned to two other instructors, who taught without influence or insight from the researchers regarding their instructional techniques. Each class averaged 25-30 students with females making up majority of the participants.

**Intervention**

The physical activity classes were held Monday through Thursday and were assigned to meet twice a week for an hour and twenty minutes between 8:00 am to 5:00 pm. The first ten minutes of class were used for students to dress out if needed and the last ten minutes of class were used for students to dress into their regular clothes. Instruction time lasted for one hour. For the intervention, the strategies to create the positive psychosocial environment (See Table 1) were implemented from the first day of class to the last. Two logs – a class log and a student log – were created to keep track of the strategies used in each class. The class log was used to record the general strategy that the instructor offered to all students in each class (ex., to foster task-involvement students worked in groups). The student log was used to record specific strategies used with each student (i.e., student demonstrated activity, effort was recognized, gave encouragement, form was corrected, provided feedback, improvement was recognized, helped to set up or break down).

For autonomy support, the instructor provided options and challenges for the workout of the day. For example, when the aerobic dance class learned step aerobics, the instructor allowed students to use one set of risers or two sets. In Pilates, students were allowed to choose between an on-the-knees Pilates push-up or advanced, off-the-knee version. In conditioning, an easier and more advanced “burpee challenge” was offered to students. To
create a task-involving environment, students worked in pairs on the second day of class to complete a required fitness assessment. Throughout the semester, students worked in groups to choreograph a song in aerobic dance, develop a 7-10 minute Pilates workout, and complete a campus run in conditioning. The instructor also gave individualized form and positive feedback to three to five students in each class. To emphasize caring, the instructor learned and used her students’ names when providing feedback, and personally engaged with three to five students about their life outside of class before and after each class period. The instructor also helped students set up their equipment. The consistent implementation of the strategies in each class was to foster a positive psychosocial environment conducive for meeting participants’ basic psychological needs and self-determined regulations.

Measures

Behavioral Regulation in Exercise Questionnaire-2 (BREQ-2). The BREQ-2 (Markland & Tobin, 2004) is a 19-item questionnaire that measures individuals’ reported level of regulation using five subscales: amotivation (4 items), external regulation (4 items), introjected regulation (3 items), identified regulation (4 items), and intrinsic regulation (4 items). For this study, the amotivation subscale was excluded from all analyses. Sample items are “I exercise because other people say I should (external), “I feel guilty when I don’t exercise” (introjected), “I value the benefits of exercise” (identified), and “I exercise because it’s fun” (intrinsic). The items are scored on a 5-point Likert scale ranging from 0 (not true for me) to 4 (very true for me). After data collection, this scale was adjusted to a 1 to 5 range to be on the same range as the other measures to ease interpretability. A previous study using college men and women in physical
activity classes reported good Cronbach’s alpha values ranging from .78 to .89 for the five subscales (Sibley, Hancock, & Bergman 2013).

Social Physique Anxiety Scale (SPAS). The SPAS (Hart et al., 1989) is a 12-item questionnaire that measures the extent to which an individual feels anxious about his or her physique in the presence of others. A sample item is “I am comfortable with the appearance of my physique or figure.” Each item is scored on a 1 (not at all characteristic of me) to 5 (extremely characteristic of me) scale. This questionnaire has been shown to have a strong reliability ($\alpha = .90$) among college students in health and fitness courses (Hart et al., 1989).

Psychological Need Satisfaction in Exercise Scale. The PNSES (Wilson, Rogers, Rodgers, & Wild, 2006) is an 18-item questionnaire that measures the satisfaction of the basic psychological needs in an exercise setting. Sample items are “I feel that I am able to complete exercises that are personally challenging” (competence), “I feel free to exercise in my own way” (autonomy), and “I feel attached to my exercise companions because they accept me for who I am” (relatedness). The items are scored on a 6-point Likert scale ranging from 1 (false) to 6 (true). The three subscales had a strong reliability ($\alpha \geq .90$) within the college population (Wilson et al., 2006).

Perceived Motivational Climate in Exercise Questionnaire. The PMCEQ (Huddleston et al., 2012) is a 27-item questionnaire that measures participants’ perception of a task- and ego-involving climate in an exercise environment. A sample item to measure the task-involving climate is “In this exercise class, the instructor encourages us to try new exercises.” A sample item to measure the ego-involving climate is “In this exercise class, students are hesitant/embarrassed to ask the instructor or other students for help.” The items are scored on
a 5-point scale ranging from 1 (strongly disagree) to 5 (strongly agree). The internal consistency of the task (α = .89) and ego-involving (α = .86) subscales have shown good reliability in exercise settings with adults (Huddleston et al., 2012).

Learning Climate Questionnaire. The LCQ (Williams & Deci, 1996) is a 15-item questionnaire that measures participants’ perception of an autonomy supportive climate by the instructor. A sample item is “I feel that my instructor provides me with choices and options.” The items are scored on a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). For this study, the shorter 6-item version of the questionnaire was used. It has shown good reliability with a Cronbach’s alpha of .85 in the physical education setting (Standage et al., 2006).

Caring Climate Scale. The CCS (Newton et al., 2007) is a 13-item questionnaire used to measure participants’ perception of caring by the instructor. A sample item is “In this exercise class, students are treated with respect.” Each item is scored on a 1 (strongly disagree) to 5 (strongly agree) scale. This questionnaire was first used with youth for validation and showed good reliability with a Cronbach’s alpha of .92 (Newton et al., 2007). Subsequent research with adult exercise participants also showed good reliability with factor loadings of .87 – .93 (Moore & Fry, 2014).

Data Analyses

The Statistical Package for the Social Sciences (SPSS v22; IBM Corp., 2013) was used to carry out all analyses. Tests for normalcy, means, and standard deviations were conducted. To handle missingness, the data was imputed (m = 20 imputed datasets) in SPSS and then aggregated for subsequent analyses to maintain power, and parameter estimate quality
The variables were split into two sets, environmental (e.g., autonomy support, task- and ego-involving, and caring) and outcome (e.g., basic psychological needs, regulations, and SPA) variables. Two MANOVA’s were conducted on the T1 values to test for significant differences between the groups on the environmental and outcome variables. Two MANCOVA’s were conducted to identify T2 group differences on the environmental and outcome variables, while controlling for the T1 values.

Procedure

After receiving University IRB approval, researchers informed participants of the opportunity to participate in the research study and their informed consent was obtained. Participants received extra credit in their class as a “Thank you,” for completing the surveys. The first survey was administered in week seven (T1), because participants needed to experience the exercise environment for a few weeks to report both their perceptions of the motivational environment and its ability to meet their basic psychological needs. The survey was comprised of the following questionnaires: Behavioral Regulation in Exercise Questionnaire-2 (BREQ-2), Social Physique Anxiety Scale (SPAS), Psychological Need Satisfaction in Exercise Scale (PNSES), Perceived Motivational Climate in Exercise Questionnaire (PMCEQ), Learning Climate Questionnaire (LCQ), Caring Climate Scale (CCS), and general demographics (i.e., gender, age, year in school). The second data collection occurred in week 13 (T2; six weeks later), and included the same measures.

Results
Means, standard deviations, effect sizes, and Cronbach’s alpha coefficients are reported in Table 1 for T1 and Table 2 for T2. Correlations for the intervention and non-intervention groups are reported in Table 3 for T1 and Table 4 for T2.

Results show acceptable reliabilities for the subscales (α = .67 - .96). At T1, both the intervention and non-intervention participants reported “agreeing” with experiencing a positive psychosocial environment composed of autonomy support (M_{intervention} = 5.84, M_{non-intervention} = 6.00), task-involvement (M_{intervention} = 4.35, M_{non-intervention} = 4.31), and caring (M_{intervention} = 4.55, M_{non-intervention} = 4.71). Strong, significant correlations were observed at T1 for the intervention group’s autonomy support with caring (r = .75), autonomy support with task-involvement (r = .68), and task-involvement with caring (r = .75); whereas the non-intervention group’s respective correlations were moderate in magnitude (r = .59, r = .53, r = .60, respectively). The participants reported SPA “being moderately characteristic” of them (M_{intervention} = 2.85, M_{non-intervention} = 3.14), and were moderately intrinsically motivated, (M_{intervention} = 3.99, M_{non-intervention} = 3.82). At T2, the intervention group reported very strong, significant correlations for autonomy support with caring (r = .86), autonomy support with task-involvement (r = .85), and task-involvement with caring (r = .88); whereas, the non-intervention group reported strong, significant relationships (r = .76, r = .70, r = .70) between the same variables, respectively. At T2, the participants continued to report moderate SPA (M_{intervention} = 2.88, M_{non-intervention} = 3.02) and at least moderate intrinsic regulation (M_{intervention} = 4.10, M_{non-intervention} = 3.69).

The presence of T1 group differences was assessed by conducting two separate Multiple Analysis of Variance (MANOVA) tests (Tabachnich & Fidell, 2006). The first MANOVA tested for group differences in perceptions of the class environment as autonomy supportive, task-
involving, ego-involving, and caring. Levene’s test of variance homogeneity revealed a significant group difference for caring ($F_{(1,131)} = 10.02, p = .002$). Box’s Test of Equality of Covariance Matrices was non-significant ($M = 15.54, p = .131$). The overall MANOVA was significant, suggesting differences at week seven between the intervention and non-intervention groups’ perceptions of the psychosocial environment (Pillai’s Trace = .098, $F_{(4, 128)} = 3.47, p = .010$). A Bonferonni correction was implemented to account for the number of variables; therefore, an alpha of .0125 (.05/4) was considered significant for the univariate follow-up tests. At this conservative level, no significant univariate group differences were found.

The second MANOVA tested for group differences in the participants’ reported satisfaction of their basic psychological needs, behavioral regulations, and SPA. Levene’s test of variance homogeneity revealed no significant group differences ($p > .05$). Box’s Test of Equality of Covariance Matrices was significant ($M = 64.23, p = .007$). The second overall MANOVA test revealed significant group differences at week thirteen between the intervention and non-intervention groups’ report of their basic psychological needs, behavioral regulations, and SPA (Pillai’s Trace = .173, $F_{(8, 124)} = 3.24, p = .002$). With $\alpha < .006 (.05/8)$, there were no significant univariate group differences in participants’ report of the above variables.

To determine T2 group differences, two separate Multiple Analysis of Covariance (MANCOVA) tests were conducted (Tabachnich & Fidell, 2006). The first MANCOVA tested for group differences in participants’ perceptions of the class environment as autonomy supportive, task-involving, ego-involving, and caring, while controlling for the corresponding T1 values. Levene’s test of variance homogeneity revealed no significant group differences ($p >
.05). Box’s Test of Equality of Covariance Matrices was significant ($M = 32.13$, $p = .001$). The overall MANCOVA revealed no significant group differences at week thirteen between the intervention and non-intervention groups’ perceptions of the psychosocial environment (Pillai’s Trace = .071, $F_{(4, 124)} = 2.36$, $p = .06$).

The second MANCOVA test examined group differences in the participants’ reported basic psychological needs, behavioral regulations, and SPA. Levene’s test of variance homogeneity revealed no significant differences ($p > .05$). Box’s Test of Equality of Covariance Matrices was also non-significant ($M = 53.17$, $p > .05$). The second overall MANCOVA test was significant (Pillai’s Trace = .317, $F_{(8,116)} = 6.71$, $p < .001$). A Bonferroni corrected alpha of .006 was considered significant for the univariate follow-up tests. There were significant differences between the intervention and non-intervention groups’ report of external regulation ($M_{intervention} = 1.94$; $M_{non-intervention} = 1.68$, $p = .001$, $d = +0.18$) and intrinsic regulation ($M_{intervention} = 4.10$; $M_{non-intervention} = 3.69$, $p = .002$, $d = +0.23$).

Discussion

The purpose of this thesis was to examine the effects of a positive psychosocial environment intervention on female exercise class participants’ basic psychological needs, behavioral regulations, and SPA. Past research has examined autonomy support and task-involvement in the fitness setting (Edmunds et al., 2008), and task-involvement and caring in physical activity (Newton et al., 2007). This was the first study to examine the three psychosocial components and their concurrent implementation in an exercise class intervention. Overall group differences were found at T1 for both sets of variables (i.e., psychosocial environment, basic psychological needs, behavioral regulations, and SPA).
However, T1 follow-up univariate tests revealed no significant group differences for individual variables. At T2, no significant group differences were found in the participants’ perceptions of the psychosocial environment. However, significant group differences were found between the intervention and non-intervention groups’ report of external regulation and intrinsic regulation. Although both groups experienced a positive psychosocial environment, the intervention group reported significantly higher external and intrinsic regulation values at week thirteen, and also had higher magnitude correlations among all four components of the environment than the non-intervention group.

It was hypothesized that participants in the intervention would report a higher perception of an autonomy supportive, task-involving, and caring environment; and a lower perception of an ego-involving environment. The findings do not fully support this hypothesis, as both the intervention and non-intervention groups reported high perceptions of a positive psychosocial environment, and a low perception of an ego-involving environment. It is possible that the instructors in the non-intervention group, through their experiences in health and fitness, each had their own strategies on how to foster a positive psychosocial environment in exercise settings that emphasized autonomy support, task-involvement, and caring. Thus, they may have already felt comfortable in relating to participants in autonomy supportive, task-involving, and caring ways. Past research has found that coaches who felt competent in their ability to coach used a less controlling, and more autonomy supportive coaching style (Vallerand & Losier, 1999). The instructors in both groups seemed to have felt competent enough in their abilities to teach the class’ content to foster a positive psychosocial environment.
The ability to foster this environment may also have been due to a mandatory training all instructors attended upon being hired for their teaching position. All of the organization’s instructors completed this training, which included information on how to structure an exercise class to make exercise more accessible to students (Maughan & Baker, 2012). In this training, some components of a positive psychosocial environment were discussed. For example, instructors were encouraged to develop modifications to accommodate various fitness levels, which is a central component to fostering an autonomy supportive environment. It is possible that the instructors incorporated the various strategies presented to make their own exercise classes accessible to all students.

Second, it was hypothesized that participants in the intervention group would experience greater satisfaction of their basic psychological needs compared to the non-intervention group at week thirteen. At the end of the intervention, both groups reported high autonomy, competence, and relatedness need satisfaction. This finding is logical since both groups perceived their classes to foster a positive psychosocial environment. The ability of the psychosocial environment to meet one’s basic psychological needs supports previous research in the fitness setting from Edmunds and colleagues (2008) and in the sport setting from Alvarez et al. (2012). Although there were no statistically significant differences, it is interesting to note that the intervention participants reported greater relatedness need satisfaction at both times compared to the non-intervention group. This finding could be because participants in the intervention had various opportunities to exercise and work cooperatively with their peers to meet the class requirements. Aside from working together, participants were encouraged to take into account the thoughts and feelings of their peers to respect their perspective.
It was also hypothesized that participants in the intervention would experience more self-determined regulations (i.e. identified, intrinsic) and less extrinsic regulations (i.e. external, introjected) compared to the non-intervention group at week thirteen. This hypothesis was supported in that the intervention group’s intrinsic regulation was statistically and significantly higher compared to the non-intervention group. Although not statistically significant, the intervention group’s identified regulation was also greater ($d = 0.11$). Contrary to what was hypothesized, the intervention group also reported higher external regulation at week thirteen. The increase in both external and intrinsic regulations can be a potential area for further research.

Participants in both groups reported moderate SPA, and no group differences were found. It could be that participants were moderately comfortable with their physique. The various areas selected for the physical activity classes provided visibility of the instructor, other students in the classroom, and others who stopped to observe the class while they were exercising. The participants’ moderate report of SPA suggests that they were relatively comfortable with being observed by their peers and others. It should also be noted that this was the first study to examine caring, task-, and ego-involving environments’ relationship with exercise class participants’ specific body image concern of SPA. At both time periods and in both groups, negative relationships emerged between the caring environment and SPA. The interpersonally inviting and accepting nature of a caring environment makes others feel accepted for who they are. The participants’ high perception of caring in both groups conveyed that they were valued by their instructor and peers, and perhaps did not feel apprehensive about their body. Negative relationships were observed between a task-involving environment
and SPA. These findings were expected given that previous research identified a negative relationship between an autonomy supportive environment and SPA (Quested & Duda, 2011). Positive relationships were seen among the ego-involving environment and SPA. SPA is characterized by apprehension that others are negatively evaluating one’s physique (Hart et al., 1989). There seems to be a pressure in the individual created from within the person or due to outside circumstances, that may be causing the anxiety toward their physique.

Although both groups reported experiencing a positive psychosocial environment, the intervention group’s strong correlations at T1 and stronger correlations at T2 revealed that the intervention group’s participants reported experiencing the components of the positive psychosocial environment more consistently. The intervention instructor kept class logs that assisted her execution and maintenance of all the environmental components (see Table 1 for examples) daily, from the beginning to the end of the semester. Through the use of logs, the intervention instructor was able to keep track of how frequently she engaged with each student and what specific strategy was used with specific students and the class as a whole. This consistent self-awareness on her part is the likely reason for the higher magnitude correlations among the intervention group at T1 and T2.

Limitations exist within this study. First, all instructors involved in this study attended a two-day training workshop to learn basic skills on interacting with students, designing exercise sessions, and administrative duties. The results suggest that the non-intervention instructors were able to successfully apply these skills when instructing their physical activity classes; thus, they were also able to create a positive psychosocial environment. Second, the study’s quasi-experimental design did not allow for truly random assignment of the classes, as teaching
schedules and knowledge were taken into account by the scheduler. The class types for the study were chosen by the researchers based on their similarity (e.g., Pilates, Yoga) to allow for comparison of the class experience; however, they were not equally divided into the intervention and non-intervention groups. Third, blinded observations of the instructors were not conducted. This would have provided further insight into how frequently specific strategies were used by each instructor in the different classes.

Although general evidence-based guides, including TARGET (Epstein, 1989; Treasure & Roberts, 1995) exist, to the authors’ knowledge tested and accepted materials for instructors to self-check how often they are implementing specific strategies to foster a positive psychosocial environment have not been published. Therefore, the intervention instructor developed logs to keep track of how frequently she implemented specific environment techniques. Future research can focus on developing and testing an environment log to help instructors, personal trainers, and coaches keep track of the frequency with which they implement the techniques to create a positive psychosocial environment. Such logs would be very beneficial to practitioners by improving their ability to self-monitor their implementation of specific positive psychosocial environment strategies and adjust accordingly. The logs could be developed from the TARGET framework (i.e. task, authority, reward, grouping, evaluation, timing; Treasure & Roberts, 1995), and Laron’s (2006) qualitative work on PE teachers’ caring behaviors.

This study was the first attempt to bring three frameworks (i.e. SDT, AGT, caring) together to develop a positive psychosocial intervention in the exercise setting and examine its effects on college women’s basic psychological needs, behavioral regulations, and SPA. The findings suggest that a positive psychosocial environment can be created and maintained by
using logs to monitor the frequency that instructors implement each strategy. A positive psychosocial environment can meet the basic psychological needs and foster more self-determined regulations. Further research into the positive psychosocial environment’s relationship with participants’ exercise SPA and best practices for training exercise leaders’ behaviors to foster a positive psychosocial environmental is warranted.
**Table 1. Intervention Strategies**

<table>
<thead>
<tr>
<th>Strategies used to foster the Positive Psychosocial Environment</th>
<th>Autonomy Supportive</th>
<th>Task-Involving</th>
<th>Caring</th>
</tr>
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<tbody>
<tr>
<td><strong>Demonstrated and encouraged students to do the task level they found personally challenging</strong></td>
<td>Gave personalized feedback to provide form improvement and positive reinforcement; incorporated group learning</td>
<td>Greeted all students by name; engaged with them before and after class as a person, not just a student</td>
<td></td>
</tr>
<tr>
<td><strong>Example of modifications:</strong> When doing push-ups, students were able to choose between an on-the-knees version and a regular push-up.</td>
<td>Example of when students were giving high effort, and technical reinforcement when their knees went too far forward during a squat: “Nice work, Jill. Try to keep your knees behind your toes.”</td>
<td>Example of personal engagement before class: “Good morning Jane. You weren’t feeling 100% last week, are your allergies better today?”</td>
<td></td>
</tr>
</tbody>
</table>
Table 2

Means, standard deviations, effect sizes, and Cronbach's Alpha's at time 1.

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<th>Introjected</th>
<th>Identified</th>
<th>Intrinsic</th>
<th>SPA</th>
<th>Competence</th>
<th>Autonomy</th>
<th>Relatedness</th>
<th>Autonomy Support</th>
<th>Caring</th>
<th>Task</th>
<th>Ego</th>
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<td>3.94</td>
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<td>(0.78)</td>
<td>(0.71)</td>
<td>(0.79)</td>
<td>(1.24)</td>
<td>(1.10)</td>
<td>(0.97)</td>
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<td>(0.45)</td>
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<td>(1.26)</td>
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<td>0.91</td>
<td>0.94</td>
<td>0.90</td>
<td>0.95</td>
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Table 3

Means, standard deviations, effect sizes, and Cronbach's Alpha's at time 2.

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<th>SPA</th>
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<th>Autonomy Support</th>
<th>Caring</th>
<th>Task</th>
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### Table 4

**Correlations at time 1.**

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<th>Caring</th>
<th>Task</th>
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Note: Upper diagonal represents the non-intervention group and lower diagonal represents the intervention group. SPA = social physique anxiety.

*Correlation is significant at 0.05 level, ** at .01, and *** at .001.
### Table 5

**Correlations at time 2.**

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</table>
Note: Upper diagonal represents the non-intervention group and lower diagonal represents the intervention group. SPA = social physique anxiety.
*Correlation is significant at 0.05 level, ** at .01, and *** at .001.
APPENDIX B

REVIEW OF LITERATURE
Exercise, a sub-category of physical activity, is defined as “physical activity that is planned, structured, repetitive, and purposive in the sense that improvement or maintenance of one or more components of physical fitness is an objective” (Caspersen, Powell, & Christenson, 1985). Exercise has been shown to also have positive effects on stress and serious mental disorders, such as depression and anxiety (Lox, Martin Ginis, & Petruzzello, 2010). Despite the wealth of support showing physical and psychological benefits from exercise, the Centers for Disease Control (2014) reports that more than one-third of Americans are obese. Specifically, recent data from the American College Health Association (2013) showed that only 9% of college age women participate in the recommended weekly amount of at least 150 minutes of moderate level aerobic activity (U.S. Department of Health and Human Services, 2008). Institutions of higher education frequently provide students access to recreation centers on campus and a physical education or physical activity course is often required to fulfill degree requirements (Sparling, 2003). With the small percentage of women reporting exercising for the recommended amount, it is important to consider some of the reasons that impede college women from exercising.

Self-determination theory (SDT; Deci & Ryan, 1985; Ryan & Deci, 2000) and achievement goal theory (AGT; Nicholls, 1984, 1989) are frameworks that have been used to examine exercise behaviors (Edmunds, Ntoumanis, & Duda, 2008; Sibley, Hancock, & Bergman, 2013; Standage, Duda, & Ntoumanis, 2003). Caring (Larson, 2006; Larson & Silverman, 2005; Noddings, 2007) has been recently examined in the physical education and physical activity settings, and several behaviors have been identified as expressing care. These three frameworks have been used to devise interventions to increase exercise participation in various
populations and can perhaps be used to create a positive psychosocial environment intervention for the female college population to increase positive outcomes.

Social Physique Anxiety

Social physique anxiety (SPA) is defined as “a subtype of social anxiety that occurs as a result of the prospect or presence of interpersonal evaluation involving one’s physique” (Hart, Leary, & Rejeski, 1989, p. 96). Physique refers to one’s overall body form and structure (i.e. body fat and muscle tone; Hart et al., 1989). An individual can experience SPA when he or she feels others are negatively observing any part of their body. It is associated with self-presentation and the strategic manipulation to present to others the desirable characteristics of oneself, and avoid the unattractive characteristics (Leary, 1992). Exercise is often done in the presence of others such as a public gym, group exercise class, or outdoors. These settings accentuate the physique and the possibility for evaluation (Crawford & Eklund, 1994).

SPA can influence exercise behavior (Brewer, Diehl, Cornelius, Joshua, & Van Raalte, 2004). SPA can be controlling and lead individuals to avoid activities that involve drawing attention to their physiques (Hart et al., 1989). For example, Brewer et al. (2004) found that female participants in a university aerobics program who were high in SPA preferred to exercise further away from the instructor and wear concealing clothing. Females high in SPA also reported a lower perception of competence compared to men, revealing gender differences (Brunet & Sabiston, 2009). Fitness instructors are also affected by SPA. In examining aerobic instructor’s motivation and SPA, Thøgersen-Ntoumani and Ntoumanis (2007) found that introjected regulation, an internal and controlling regulatory style, positively predicted instructor’s SPA. This finding is logical, because of the underlying controlling nature of SPA and
introjected regulation. SPA has also been examined in the dance setting. In a study by Quested & Duda (2011) a positive relationship emerged between SPA and extrinsic motivation. These results highlight how SPA is related to one’s exercise behaviors and motivation. These few key findings may provide an avenue to explore how SPA can be countered by fitness professionals.

In the same study involving dancers, a negative and significant association was observed between autonomy support and SPA (Quested & Duda, 2011). Autonomy support from a leader occurs when he or she gives choices and takes into account others perspectives (Deci & Flaste, 1995). It is possible that when students have a say in what dance courses they enroll in or what pieces they would like to dance to, they may experience greater volition and endorsement of their choices, and therefore, greater autonomy. Similarly, Thøgersen-Ntoumani & Ntoumanis (2007) found that autonomy need satisfaction was a negative predictor of SPA and other body image concerns. These key findings suggest that as the need for autonomy is met, SPA can decrease and college women can exercise for more internalized reasons, such as enjoyment (Egli, Helen, Bland, Melton, & Czech, 2011). Environments that aim to meet participant’s needs of autonomy, competence, and relatedness can enhance the psychological well-being of its participants (Deci & Flaste, 1995; Deci & Ryan, 1985). Furthermore, interventions that minimize external pressures to exercise, and instead focus on mastering tasks and improving and feeling safe and cared for are essential. A positive psychosocial environment composed of autonomy support, task-involvement, and caring may help young women develop more self-determined motives for exercising and experience less SPA.

*Self-Determination Theory*
SDT is a framework for studying human motivation in several domains, including exercise (Deci & Ryan, 1985; Ryan & Deci, 2000). SDT is comprised of three overarching types of motivation: amotivation, extrinsic motivation, and intrinsic motivation. Amotivation is a state where an individual has no intention or desire to engage in an activity and lacks a sense of personal causation. External motivation is characterized by motivation to act due to outside demands. Intrinsic motivation is when an individual is inherently interested in doing an activity and is satisfied by participating in it (Ryan & Deci, 2000). These three motivations are anchor points to SDT’s continuum of five behavioral regulation types that direct how individuals approach an activity or task. These behavioral regulations – external, introjected, identified, integrated, and intrinsic – lie on a continuum; such that one’s level of control decreases as one moves toward intrinsic motivation.

External, introjected, identified, and integrated regulations all fall under extrinsic motivation. The most controlling type of regulation, external regulation, is when an individual participates in activities because of outside pressures, such as demands, deadlines, and rewards (Deci & Ryan, 2000). For example, a woman who is overweight and close to developing high cholesterol is ordered by her physician to exercise to help her lose weight and lower her cholesterol. Although the exercise prescription is beneficial to her, she will exercise from an external regulation because it was placed on her by someone else. Unlike external regulation, introjected regulation is characterized by internal pressure. The self-imposed expectations do, to an extent, come from societal norms. However, they have been adopted by the individual and the person strives to meet the introjected expectation to avoid feeling guilt or shame (Deci & Flaste, 1995). For example, if the participant in the above example decides on her own that
she wants to lose 20 pounds in three months because she does not like her body, she may have an introjected regulation. She is placing a high demand on herself to avoid any further negative feelings toward herself or her body. A less extrinsic type of regulation is identified regulation, which occurs when an individual begins to value an activity because of its benefits (Deci & Ryan, 2000). If, after a few weeks of exercise, the woman in the above example sees that she has more energy and is less anxious, she may continue to exercise because she values these benefits. Integrated regulation is the least extrinsic regulation and occurs when a behavior is synthesized with other parts of oneself and one begins to identify with certain activities or behaviors (Deci & Ryan, 2000). The woman in the example wants to be physically fit. She has strongly integrated exercise as a part of her life because it has enabled her to have more energy and do more with the people she cares about. Finally, intrinsic regulation, the most self-determined type of regulation, is when individuals participate in an activity because they find it interesting, enjoyable, and they are satisfied doing it (Ryan & Deci, 2000). The participant above may exercise from an intrinsic regulation when she experiences joy, pleasure, and inherent interest in exercise. More self-determined regulations (i.e. identified, integrated, intrinsic) are characterized by an internal endorsement of one’s choices, congruence of those decision’s with one’s values, and satisfaction in partaking in that specific activity or task. More self-determined regulations are associated with greater exercise adherence (Edmunds et al., 2008).

The five behavioral regulations frame how one approaches various activities in everyday life. They can impact one’s self-esteem, interest, and effort (Deci & Flaste, 1995). It is possible that someone who has an external regulation, may overtime, become less extrinsically regulated and thus, move toward a more intrinsic regulation. How one moves along the
behavioral regulation continuum is also influenced by three basic psychological needs. These needs are autonomy, competence, and relatedness. Autonomy refers to the level of free will individuals’ perceive they have to make a choice for themselves (Deci & Flaste, 1995). Competence refers to individuals’ reported ability to carry out a task or skill. Relatedness is how close or connected individuals feel to each other. Satisfaction of these three basic needs promotes more self-determined regulations. The basic psychological needs and behavioral regulations ultimately influence whether one is amotivated, extrinsically motivated, or intrinsically motivated (Deci & Flaste, 1995; Ryan & Deci, 2000).

SDT has been applied extensively in the exercise domain to examine exercise behaviors (Edmunds et al., 2006; Edmunds et al., 2008; Sibley et al., 2013). Specifically, researchers have examined how satisfying individuals’ need for autonomy by creating an autonomy supportive environment, influences exercise participation (Edmunds et al., 2008). An autonomy supportive environment is an environment where choices are provided to allow individuals to have a say in how they want to meet expectations (Deci & Flaste, 1995). When individuals are given options in how they will complete a task, they are empowered because they are practicing their will (Deci & Flaste, 1995). Studies show that when participants were able to choose how they would fulfill a task they reported greater creativity, interest, and adherence to the activity (Deci & Flaste, 1995; Edmunds et al., 2008). Although choice is important in an autonomy supportive environment, it does not mean that individuals are free to do anything they want.

Autonomy support also involves setting limits to encourage others to be responsible and have a say in how they will complete tasks. The manner in which instructions are delivered can be autonomy supporting with limits or, alternatively, the delivery can be controlling (Deci &
Ryan, 1987). For example, if push-ups are one of the exercises to be done in an exercise class, the instructor can say, “Today, we will be doing push-ups to work on our arms. There are two levels, an easier first level and a more challenging second level. For the level one push-up, you will be on your knees while bringing your chest to the ground and up. If you want to challenge yourself today, you can do a level two push-up and bring your knees off of the floor. Try the level that you feel comfortable with and we will start together on my cue.” There are a couple points to take note of in this example. First, the instructor is providing a rationale for the activity, which is to exercise the arms. The leader is also conveying that push-ups are a requirement to be fulfilled and is giving participants options on how to complete them. The opposite of this would be, “Today, we have to do push-ups” without mention of rationale, options, challenge, or being comfortable with doing an exercise. Phrases such as “have to,” “should,” and “standard” are pressuring and controlling. Instructions can be framed in an autonomy supportive manner, while providing expectations of what is acceptable. The purpose of limits is to encourage responsibility and provide direction, rather than to be controlling (Deci & Flaste, 1995; Deci & Ryan, 1987). Providing an autonomy supportive environment requires work on behalf of the exercise instructor to be able to give appropriate choices, use non-coercive language, set limits, and take on the perspective of others (Deci & Flaste, 1995).

Autonomy support was examined in a review of three SDT based randomized control trials from a clinical and client-based perspective (Fortier, Duda, Guerin, & Teixeira, 2012). One of these, the Empower Trial from the UK, was an intervention made up of mostly female participants. A health and fitness adviser was trained in SDT principles, including how to provide autonomy support to clients. The advisors used motivational interviewing to discuss previous
barriers to physical activity and collaborated with the client to increase their physical activity levels (Miller & Rollnick, 2013). The participants, who were mostly middle aged, overweight or obese females, were assessed at three and six months. Results revealed that the extent to which the advisor provided autonomy support at three months was positively related to participants feeling autonomous, competent, and related when the program ended. This study highlighted the long-term effect autonomy support may have on participants in interventions to enhance their health.

SDT based interventions have also been tested in the fitness setting with exercisers. Edmunds et al. (2008) tested a SDT based intervention by creating an autonomy supportive, well structured, and interpersonally involving environment in a university recreation center’s group exercise class. The intervention group received autonomy support, clear goals about expectations, as well as extra time, energy, and affection from the instructor. The control group was taught in a regular teaching style typical of the fitness environment, and no attempts were made to decrease their exercise experience. Both classes were taught by the same instructor, who tailored her teaching style to create the motivational environment of the class. The results showed that the participants in the intervention group displayed a significant, positive linear increase in their perceptions of autonomy support, structure, and interpersonal involvement, as well as their competence and relatedness need satisfaction over 10 weeks. Also, the intervention group’s class attendance was significantly greater than the control group’s attendance. An earlier study by Edmunds et al. (2006) with participants from fitness and retail settings showed similar results. Low, positive associations were observed between perceived autonomy support and autonomy ($r = .26$) and perceived autonomy support and relatedness ($r$
Most importantly, perceived autonomy support from the exercise class leader significantly predicted the participants’ reported satisfaction of their basic psychological needs in the exercise setting. Autonomy need satisfaction was a significant, positive predictor of identified and integrated regulation, and intrinsic motivation at weeks six and ten of the intervention. The studies by Edmunds and colleagues provide evidence for how an autonomy supportive environment in an exercise class can meet the basic psychological needs of its participants, increase more self-determined regulations, and encourage positive outcomes, such as adherence.

Autonomy support has also been related to psychological outcomes. Quested and Duda (2011) examined the relationships between young dancers’ perceptions of the environment, motivational regulations, and body image disturbances, including SPA. A significant, negative correlation was found between perceptions of the autonomy supportive environment and SPA. Autonomy support was also a positive predictor of more self-determined regulations. Finally, a significant, positive regression path was found between extrinsic motivation and SPA. This may be the result of a heightened emphasis placed on dancer’s physiques, which is common in the dance environment. Although exercise classes may not place a stringent emphasis on participants’ physique, covert pressures can still exist in exercise settings (Brewer et al., 2004).

Achievement Goal Theory

A second framework for examining exercise behaviors is achievement goal theory (AGT; Nicholls, 1984, 1989) which proposes that the perceived motivational environment in a class can influence participants’ motivation. AGT researchers identified two motivational environments, task-involving and ego-involving. A task-involving environment promotes
learning, self-referenced effort, mastery of activities, and cooperation with peers (Burton & Raedeke, 2008). For example, an aerobic dance class instructor teaches a dance combination with basic steps to encourage newer participants to do what they can, and adds in more advanced steps to challenge the regular attendees. As she observes the class, she sees the participants trying their best, and verbally acknowledges them, saying “Great job class, keep up your hard work.” For the cool-down and stretching portion of the class, she encourages participants to partner up to help each other stretch. A few points should be noted about this environment. The instructor is encouraging participants to learn a dance combination that is personally challenging. The students are doing the steps to the best of their ability, therefore, she praises them for their self-referenced effort. She also fosters cooperation and comradery by pairing up participants to stretch. Such an environment has been associated with greater interest and enjoyment (Huddleston, Fry, & Brown, 2012).

In contrast, an ego-involving environment focuses on outperforming others, social comparison, punishing mistakes, and instructor favoritism (Burton & Raedeke, 2008). For example, instructor B also teaches an aerobic dance class at the recreation center. She teaches one combination with no modifications and tells participants of all levels to do this level routine, even if it is their first class. The instructor notices student’s effort and difficulty in keeping up with her, but praises those students who are doing well and points out to the class that this is how it “should be done.” During the cool-down and stretching portion of the class, she shows favoritism toward students that are highly flexible. An ego-involving environment is associated with greater anxiety and less enjoyment (Huddleston et al., 2012; Reinboth & Duda, 2006).
Overall, an ego-involving environment is associated with more negative effects, while a task-involving environment is associated with more positive effects (Huddleston et al., 2012; Reinboth & Duda, 2006). To the researcher’s knowledge, there has been little to no research examining the relationship between a task-involving or ego-involving environment and SPA. Any associations found have been indirectly related to characteristics of a task-involving environment. More research is necessary to specifically understand how the task- and ego-involving environments impact women’s SPA.

**Autonomy Supportive and Task-Involving Environments**

The components of autonomy supportive and task-involving environments complement one another (Edmunds et al., 2008). For example, when the instructor of an aerobics class gives participants the option to choose between a level one push-up that is easier and a level two push-up that is more advanced, he can frame the options in this manner, “You can do a level one push-up on your knees, or if you want to challenge yourself today, do a level two push-up off of your knees.” The instructor’s wording provides autonomy support by giving participants options, and concurrently, a task-involving environment by encouraging effort, individualized challenge, and mastery of the push-up exercise. Reinboth and colleagues (2004) found a positive, significant relationship between perceptions of autonomy support and improvement and effort. This positive relationship highlights how individuals can put forth effort into an activity when they are given a level to choose from.

Studies have provided support for a task-involving environment meeting individuals’ basic psychological needs (Alvarez, Balaguer, Castillo, 2012; Reinboth et al., 2004; Smith et al., 2005). Alvarez et al. (2012) examined the effect of the coaching environment on adolescent
male soccer players’ well-being and intentions to continue to participate in soccer. Results revealed significant, positive regression paths between perceptions of a task-involving environment and autonomy, competence, and relatedness; the task-involving environment also predicted future intention to play soccer through need satisfaction and intrinsic motivation (Alvarez et al., 2012). These results provide greater evidence for how a task-involving environment can meet the basic psychological needs in a sport setting, and similar results may also be seen in the exercise setting. In this study, a negative path also emerged between participants perceptions of an ego-involving environment and their relatedness satisfaction. This finding is logical, because an ego-involving environment promotes comparison and outperforming others; which may inhibit the opportunity to feel close or related to peers or teammates. In sum, task- and ego-involving environments strongly influenced the basic psychological needs and participants’ future involvement in soccer.

An earlier study with athletes also examined the coaching environment, need satisfaction, and psychological and physical well-being of athletes (Reinboth et al., 2004). Results showed that the athletes’ perception of a task-involved coach was a positive predictor of their perceptions of competence. The task-involving environment in sport focuses on effort and mastery, which may enable individuals to feel that they can accomplish a task. Alvarez et al. (2012) found that satisfaction of competence was a significant positive predictor of overall intrinsic motivation. Thus, a task-involving environment in the exercise domain should see similar results.

Caring Environment
A recent approach to understanding how the motivational environment can influence exercise behaviors is the idea of caring. Noddings (2007) called for and encouraged the moral and ethical development of students by challenging educators to teach with care. In the physical education setting, Larson (2006) identified behaviors perceived as caring by students.

The qualitative study by Larson (2006) identified a main overarching category described as “pay attention to me” and eleven clusters of behaviors that physical education students’ perceived their teachers use to express their care for the students. The eleven clusters were divided into three subcategories: recognize me, help me learn, and trust/respect me. Larson (2006) ranked these eleven behaviors by the frequency they were reported. The most frequent cluster was PE teachers showing a student how to do a skill by physically placing the student into the correct position to execute the skill. The second cluster was the teacher honoring student requests, such as utilizing the weight room after class. The third behavior was giving students compliments, such as “You are a good athlete” or “Great job.” Notably, the fourth cluster involved the teacher confronting student behavior, including excessive talking and not doing the correct exercises. This behavior specifically focused on redirecting the student back to the class task. The fifth cluster was inquiring about student’s health when they were sick or injured. The sixth cluster was attention to students who were injured. The seventh cluster was allowing students to re-do a physical fitness or skills test. The eighth cluster was comprised of motivating students by cheering and encouraging them. The ninth cluster was participation of the teacher in the students’ activities. The tenth cluster was persuading and encouraging students to participate in the class. Finally, the eleventh cluster was the teacher showing concern for students’ future health. This study suggests that students are keenly aware of their
teacher’s caring behaviors and take to heart when their teacher takes the time to pay attention to them by showing them how to do a skill correctly, asking about their health, and motivating them.

Some of the clusters such as showing a student how to do a skill correctly and motivating them, are related to characteristics of a task-involving environment. For example, female athletes reported perceiving a task-involving environment when the coach does not ignore mistakes (Smith et al., 2005). Caring teachers recognize when a student is doing a task incorrectly and take the time to correct the student. This signifies acknowledging mistakes and not ignoring them. Athletes also identified positive feedback as part of a task-involving environment (Smith et al., 2005). Motivating and encouraging students through compliments can be part of providing positive feedback. In fact, when Newton et al. (2007) initially tested the Caring Climate Scale with youth, they found a significant, positive correlation between task-involving and caring environments. Task-involving environments have been shown to meet the basic psychological needs of its participants. Its positive association with a caring environment suggests that a caring environment may also meet the basic psychological needs.

Past research demonstrates that there are associations between autonomy supportive, task-, ego-involving, and caring environments (Edmunds et al., 2008; Newton et al., 2007). An autonomy supportive environment focuses on providing choices and minimizing control over others (Deci & Ryan, 1985). A task-involving environment promotes cooperative learning, effort, and challenging others to do what they are capable of accomplishing (i.e., individual improvement). An ego-involving environment is other-referenced and spurs social comparison and pressure (Nicholls, 1984). A caring environment has been shown to be non-judgmental, and
characterized by paying attention to others (Noddings, 2007). The autonomy supportive and task-involving environments can meet the basic psychological needs, decrease extrinsic regulations, and increase more self-determined regulations. An autonomy supportive environment may decrease SPA, because the focus is on allowing participants to do an exercise they have endorsed and feel comfortable with. Some variations of an exercise may affect the “exposure” of one’s body, and participants can choose whether they want to do one exercise or the other. The positive feedback and focus on effort and individual improvement in a task-involving environment can help women feel more competent (Alvarez et al., 2012; Brunet & Sabiston, 2009) and, as a result, may diminish their SPA. An ego-involving environment’s focus on external pressures can thwart the basic psychological need of relatedness, increase anxiety and decrease enjoyment (Alvarez et al., 2012; Huddleston, 2012; Reinboth et al., 2004). No known research on an ego-involving environment’s relationship to SPA was found; however, it would be logical that the emphasis on comparison to others could increase participants’ SPA. The caring environment, which is positively related to a task-involving environment, can meet the basic psychological need of relatedness (Alvarez et al., 2012; Newton, 2007). In Reinboth et al. (2004), athletes who perceived their coach as providing assistance and emotional support to others on the team was a strong, positive predictor of their relatedness within the team. Minimal research exists examining the relationship between perceptions of a caring environment and basic psychological needs, motivational regulations, and SPA.
APPENDIX C

REFERENCES
REFERENCES


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and the ASCD Character Education Network.


