A MOTIVATIONAL CLIMATE ANALYSIS OF TEACHER BEHAVIORS
AND STUDENT BEHAVIORAL RESPONSES

By

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PURPOSE: To compare the differences between teaching behaviors and overall class perception in the physical education environment. A second purpose will be to compare differences in student perceptions of the motivational climate, needs satisfaction, and student behaviors in the middle school aged student population. METHODS: A total of four teachers (1 male and 3 female) with teaching experience \( (m = 17.8, SD = 6.78) \) ranging from 1 to 23, and 131 students in middle and high school. Data collection began just after the second semester where before and after each observation period, students completed pre and post questionnaires on perceptions of the motivational climate, needs satisfaction, and learned helplessness. Descriptive statistics and reliability coefficients will be calculated for motivational climate, needs satisfaction, and TARGET behaviors for teachers, classes, and individual students. Objectivity will be established after each observer’s score will be compared to three reference points (individual students) on separate occasions over the course of a two-week period. MANOVA will determine the effects the motivational climate had on students’ TARGET behaviors, perceived motivational climate, and needs satisfaction. MANOVA will also help determine any interactions among dependent variables and among independent variables.
Acknowledgements

I would like to sincerely thank my committee for their help in refining my project, most of all, my supervisor, Dr. Rock Braithwaite, for his patience and constructive guidance throughout this entire process. I would like to thank the Kinesiology Department for extending their resources for use of necessary computer programming, without which this thesis would not have been feasible. Last but not least, I would like to thank my significant other, Cassie, and Mom, Dad, and brother Matthew, for being supportive of my efforts towards this project.
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Introduction

Teaching and learning environments are dynamic and constantly changing and research indicates that the teachers influence students’ affect, cognition, and behaviors (Martinek, 1982; 1984; 1986; Morgan, 2005; Morgan & Carpenter, 2002). In order for a physical education class to provide a proper learning environment, it is important for both the teachers and the students that the lessons are structured by determining goals, expectations, content covered, and teacher-student interactions (Byra & Coulon, 1994; Hall & Smith, 2006; Housner & Griffey, 1985). If a lesson is structured accordingly, the teacher creates a mastery climate by developing lessons that increase a student’s competence. This is achieved by focusing on effort and personal improvements rather than demonstrating competence. When teachers create a mastery climate, there needs to be a focus on the student’s sense of autonomy, their perceived competence, and relatedness to the physical education environment that the teacher has created (Ames, 1992; Epstein, 1989; Morgan, 2005). In order for perceptions of the motivational climate to be understood, the innate psychological needs of competence, autonomy, and relatedness must be considered (Deci & Ryan, 2000). Those students who do not experience autonomy, competence, or relatedness generally have poorer motivation, performance, and well-being (Deci & Ryan, 2000). Different amounts of needs satisfaction are met as different modes of regulation, autonomous versus controlled, are utilized within the physical education environment.
The process of understanding why an individual pursues specific goals is necessary to determine the effects the goal has on one’s perception of the motivational climate (Deci & Ryan, 2000). If the goal established by the physical education teacher requires norm referenced comparisons to demonstrate competence then there is an ego involvement perception (Nicholls, 1984). When teachers sets self-referenced goals for students to develop competence, there is a task involvement perception (Nicholls, 1984). Many studies have attempted to structure lessons that would help improve student perceptions and enhance achievement in the physical education environment (Morgan, 2005; Morgan & Carpentar, 2002; Solmon, 1996). Lessons structured to reflect a mastery oriented climate result in students showing greater effort, enjoyment, needs satisfaction, and the students believe that success is achieved through effort. Performance oriented climates results in less needs satisfaction, a tendency for the students to develop avoidance behaviors, and students believe that their natural ability is what leads to success (Ames, 1992a; Morgan, 2005; Nicholls, 1989; Treasure, 2001). Studies utilizing Epstein’s (1988) TARGET model to generate physical education lesson plans resulted in influencing students’ perceptions to a more mastery-learning environment rather than a performance-learning environment (Morgan, Kingston, & Sproule, 2005; Roberts & Treasure, 1992; Treasure & Roberts, 1995). When the physical education teacher’s lesson is not influenced by TARGET, the amount and quality of practice is greatly influenced leading to low perception and motivational climate.
TARGET

Epstein (1988) created the acronym TARGET to describe specific teaching and student behaviors that contribute to a mastery-oriented climate. The behaviors described in TARGET are task, authority, recognition, grouping, evaluation, and timing which are all categorized as performance or mastery related. In order to generate a performance and/or mastery motivational climate, Treasure (2001) applied Ames (1992b) research to physical education and sport contexts by defining the design of the tasks, distribution of authority, use of rewards, group formation, evaluation practices, and the pace of the lesson. When the teacher manipulates TARGET variables, he/she is able to control which motivational climate is used to influence the students during the lesson. Within mastery motivational climates, the levels of ability are dependent on the student’s self-improvement and are compared only with personal performance (Nicholls, 1989; Morgan, 2005). A mastery motivational climate focuses on effort, improvement, and cooperation (Ames, 1992a; Nicholls, 1989; Morgan, 2005).

Students are more willing to participate when the tasks are varied resulting in increased motivation which occurs as the students become more involved with decision-making and discussions, leading to enhanced autonomy within the classroom (Blumenfeld, 1992; Treasure, 2001). When students perceive a mastery climate, they recognize there are varied tasks throughout the lesson and they are clearly attempting to improve on their own self-referenced goal (Ames, 1992b; Epstein, 1989; Treasure, 2002; Treasure & Roberts, 1995). When students perceive a performance climate, they
recognize that when they are challenged with the same task as each other, this provides a clear comparison between the students. In a mastery climate, the student is clearly involved in leadership roles and decision-making throughout the lesson, but in a performance climate the students do not have any role in making decisions during the lesson (Ames, 1992b; Epstein, 1989; Treasure, 2002; Treasure & Roberts, 1995). Ability evaluation within a mastery climate is self-referenced and the focus is on individual goals and personal performance/improvement whereas performance climates emphasize the contrast in performance or social comparison (Treasure, 2001). In a mastery oriented climate students are grouped together with varying but equal abilities to reduce the chance of an opportunity to compare ability levels. A performance-oriented climate identifies and groups students explicitly on ability level (Ames, 1992b; Epstein, 1989; Treasure, 2002; Treasure & Roberts, 1995). A lesson’s pace significantly influences a student’s motivation by the allotment or constraint of time to develop the skill being presented in class, and in a mastery climate, teachers plan to allow for ample time for all students to work at their own pace, whereas a performance climate would be when a teacher does not plan for much time to develop the skill independently (Ames, 1992a; Treasure, 2001).

Through manipulation of the TARGET behaviors in a physical education class, the motivational climate can successfully focus on achievement context (Treasure, 2003). According to Treasure and Roberts (1995), the students who participated in a lesson created using the TARGET model perceived the motivational climate to focus more on the personal achievements within each activity and not on the performance or comparison
of others, which lead to more adaptive patterns of achievement cognitions and affective responses. Since a child’s perception of their own competence within the physical education environment is influenced by situational factors and instructional demands, it’s imperative to establish the process goals that influence student motivation in order to identify how to create a motivational climate.

**Self-Determined Motivation**

Deci and Ryan (2000) examine how the self-determination theory separates the content of the goal (outcome) and the process of attaining these goals and suggests that motivation requires competence, autonomy, and relatedness in order to attain valued outcomes. If a teacher understands motivation (specifically intrinsic, extrinsic, and amotivation) and has the ability to create competence, autonomy, and relatedness in the learning climate, then this teachers’ students would benefit greatly as their psychological needs are being met (Deci & Ryan, 2000; Standage, Duda, & Ntoumanis, 2005). Students who are intrinsically motivated participate due to personal satisfaction such as enjoyment for the activity. Extrinsically motivated students participate for an external reward such as pursuit of a good grade. A completely unmotivated student (amotivated) participates but not with full effort or concentration for the activity due to a disinterest. The interaction of a student being able to meet the challenges and engage in mastery tasks is referred to as competence (Deci & Ryan, 2000). In a physical education environment, tasks should be realistic in nature and set up so that every student experiences success. When a student is allowed to self-regulate their activities, they experience autonomy
because they have been given a task that they will conduct on their own (Deci & Ryan, 2000). Relatedness is a term used to describe when a person needs to feel connected to a community for feelings of security, belongingness, and intimacy with others in the environment (Deci & Ryan, 2000). Students who are part of a team experience the feeling that the team would not be complete without them. Unfortunately, if a student does not have these three psychological needs met in the physical education environment, they generally display high levels of amotivation which results in poorer student outcomes and behaviors (Deci & Ryan, 2000; Ryan, 1995).

Previous research suggests that teaching behaviors contribute to decrease in motivation and in low student achievement (Martinek & Karper, 1986; Morgan & Carpenter, 2002). Student achievement behaviors direct students to seek strategies for success or avoidance of failure (Biddle & Fox, 1988). Motivated students generally select challenging and realistic situations whereas unmotivated students tend to select easy tasks where success is much more likely and failure is not apparent (Diener & Dweck, 1980; Dweck, 1975; Dweck, 1986). Learned helplessness has been found to impact student expectations and perceptions which produce maladaptive strategies for learning (Ames, 1992b; Martinek & Griffith, 1993; Martinek, Griffith, & Joseph, 1994; Nicholls, 1989). Developing these maladaptive strategies for learning causes a student’s perception of competency within the learning environment to attribute to success and failure of factors beyond their control (Dweck, 1975). If a student perceives success as unattainable, they are less likely to focus their effort to the task, persist if failure is the common outcome, and select activities that are more if not the same difficulty (Nicholls, 1984; 1989).
Achievement motivation is utilized within physical education in regards to personality (task or ego orientations) and situational factors (mastery or performance climates).

**Statement of Purpose**

The purpose of this study will be to compare the differences between TARGET behaviors of a teachers’ lessons and the overall class perception in the physical education environment as well as student perceptions of the motivational climate, needs satisfaction, and student behaviors (TARGET) in the middle school aged student population for the most difficult classes as perceived by the teacher. It is hypothesized that teacher TARGET behaviors that focused on a mastery climate would be related to higher student perceptions of motivational climate, higher needs satisfaction, higher lesson involvement, and less cases of learned helplessness. This mastery climate would most likely occur in the teacher’s best class. When the teacher’s behavior is more focused on a performance climate, there would be greater perception of a performance climate, lower needs satisfaction, less lesson involvement, and more learned helplessness. This performance climate would most likely occur in the teacher’s most difficult class. Therefore, the researchers hypothesized that the teacher’s perceived best class would consist of mastery oriented students which will have higher perceptions of mastery climate, higher needs satisfaction, and more behaviors relating to TARGET. The teacher’s most difficult class would consist of performance oriented students and will have a higher perception of performance climate, lower needs satisfaction, fewer behaviors related to TARGET, and higher levels of learned helplessness.
Methods

Participants

A total of four teachers and classes from two schools participated in this study. All participants were from a large county in Northern California with equal numbers of male ($n = 1$) and female ($n = 3$) teachers at both the middle school and high school levels. Teacher experience ($m = 17.8$, $SD = 6.78$) ranged from 1 to 23 years and all participants were at their current school at least three years. There were 131 students at the middle school level ($n = 92$, 22 males, 65 females, 7 no gender reported) whose ages ranged from 12 to 14 years ($m = 13.1$, $SD = 0.65$), while high school students ($n = 46$, 9 males, 30 females, 7 no gender reported) ranged in ages from 15 to 18 years ($m = 15.1$, $SD = 0.71$). At the time of participation all students were enrolled in compulsory physical education classes.

Because the purpose of the study was to determine the differences among planning, motivational climate, needs satisfaction, and learned helplessness, teacher selection was based on the criterion that no formal lesson plan was used when providing instruction. Student participation was determined by two conditions that included both the teacher and researchers’ input. The first condition was based on each individual teacher’s perception and identification of their most difficult class. Class difficulty will be defined as a class where at least 50 percent of students lacked direction and intensity of effort (Sage, 1990). The second criterion was imposed by the researchers and based on
a priori power calculation to determine effect size. Using G*Power 3.0 to estimate a large
effect size ($d = .8$, $\alpha = .05$), the minimum number of students required for this study was
131 (Buchner, Erdfelder, Faul, & Georg-Lang, 2008).

**Procedures**

After institutional review board (IRB) approval was granted, informed consent
was sought and approved by teachers, principals, and students. Quantitative and
qualitative measures (see measures) were collected from both teachers and students at the
beginning of the second semester of school and included questionnaires and video
recording for systematic observation and coding. Data collection began just after the
second semester of the school year to allow teachers and students to form routines and
establish teaching-learning patterns. Before and after the observation period, students
completed pre and post questionnaires on perceptions of the motivational climate, needs
satisfaction, and learned helplessness. To prevent the Hawthorne effect the researchers
recorded a total of five class sessions, however the beginning two sessions were later
eliminated in which no data was collected from. Table 1 and 2 refer to the teacher and
student behaviors that were observed and coded according to mastery and performance
aspects for each videotaped lesson. The need to examine interactions between teachers
and students required that teachers were fitted with an external microphone. Systematic
observation and coding was carried out using DARTFISH 7.0 TeamPro software in
which three videotaped lessons for each teacher was recorded over the course of a six-
week time period.
Measures

TARGET

Analysis of teacher behaviors in relation to TARGET indices has been well established in physical education contexts (Carpenter & Morgan, 1999; Morgan & Kingston, 2008; Morgan et. al, 2005; Morgan, Sproule, Weigand, & Carpenter, 2005) and was used as the basis for this study’s systematic analysis and coding. Behavior frequency and duration were analyzed according to events that align with TARGET structures in mastery and performance climates. Since teacher behaviors influence student responses according to the perceived motivational climate (Ames, 1992; Epstein, 1989), corresponding student behaviors were also coded in terms (frequency and time episodes) of a mastery and performance climates. Table 2 presents the specific behaviors for both groups measured.

Prior to initiating this study, three experts on motivational climate were consulted to validate both teacher and student behaviors for performance and mastery climates. Each expert provided feedback, which was used to make revisions, and agreed on the final version that was representative of mastery and performance climate behaviors of teachers and students. Operational definitions for mastery, neither, and performance student and teacher TARGET Behaviors are found in Tables 1 and 2. Observational analysis to code all observed behaviors was conducted using the Dartfish 7.0 TeamPro (2009) software.
<table>
<thead>
<tr>
<th>TARGET Variable</th>
<th>Mastery</th>
<th>Neither</th>
<th>Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Task 1</strong></td>
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</tbody>
</table>
| **Mastery**     | -The teacher sets an individual self-referenced or cooperative group-referenced goal for the task  
- The teacher asks students to set their own self-referenced goal or cooperative group-referenced goal for the task | -No clear self-referred or comparative goal is set by the teacher | -The teacher sets a comparative individual or group goal |
| **Task 2**      |         |         |             |
| **Authority**   | -The teacher allocates / encourages students to be involved in leadership roles and / or decision making | -The teacher makes all the decisions and doesn’t allocate or encourage students to make decisions within the tasks or adopt leadership roles | -The teacher organizes / allows only one task or practice to take place at any one time  
- The teacher organizes an undifferentiated / non individualised task or practice variation within the lesson (all students work at the same level) |
| **Recognition/Evaluation** | -The teacher provides feedback to students focused on individual effort, improvement or accomplishment in Private  
- The teacher allows equal opportunity for rewards based on effort and improvement  
- The teacher instructs / encourages students to self-evaluate against their own goals | -The teacher provides general feedback to the students (to no one in particular)  
- The teacher provides feedback focused on ‘luck’  
- The teacher provides instructions | -The teacher provides feedback to students focused on individual effort, improvement or accomplishment in Public  
- The teacher provides feedback to students focused on normative comparisons with other students or standards |
| **Grouping**    | -The teacher organizes the students into small groups (6 or less) not based on any explicit ability differences  
- The teacher initiates a change of groups within the lesson | -The teacher organizes the students into large groups (6 or more) or they participate as a whole class | -The teacher organizes the students into small groups (6 or less) based on explicit ability differences  
- The teacher organizes the students into large groups (6 or more) or they participate as a whole class |
<p>| <strong>Timing</strong>      | -The teacher allows flexible time for students to practice, progress, plan or evaluate | -The teacher is giving instruction or feedback and the students are inactive (not involved in planning, performing or evaluating) | -The teacher does not allow flexible time for students to practice, progress, plan or evaluate |</p>
<table>
<thead>
<tr>
<th>TARGET Variable</th>
<th>Mastery</th>
<th>Neither</th>
<th>Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Task 1</td>
<td>-The student is clearly attempting to improve on his/her own self-referenced or group-referenced goal -The student is clearly involved in setting his/her own self-referenced or group-referenced goal for improvement</td>
<td>-The student is not clear as to whether the goal of the task is self-referenced or comparative -The student is warming up or cooling down without any clear self-referenced or comparative goals</td>
<td>-The student is clearly attempting to outperform other individuals or groups</td>
</tr>
<tr>
<td>Task 2</td>
<td>-The student is participating in different tasks or practice variations to others in the class at the same time -The student is participating in a differentiated / individualized task or practice variation within the lesson -The student is working at his/her optimal level – 80% success rate</td>
<td></td>
<td>-The student is participating in the same task or practice variation as all other classmates at the same time -The student is participating in the same undifferentiated / non individualised task or practice variation as all other classmates within the lesson -The student is working at a non-optimal level of &gt; or &lt; 80% success rate</td>
</tr>
<tr>
<td>Authority</td>
<td>-The student is clearly involved in a leadership roles and / or decision making</td>
<td></td>
<td>-The student is not clearly involved in a leadership roles and / or decision making</td>
</tr>
<tr>
<td>Recognition/</td>
<td>-The student receives private feedback on individual effort, improvement or accomplishment -The student is clearly self-evaluating against his/her goals</td>
<td>-The student receives feedback focused on ‘luck’</td>
<td>-The student receives public feedback on individual effort, improvement or accomplishment -The student receives feedback on normative comparisons with other students or standards</td>
</tr>
<tr>
<td>Evaluation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grouping</td>
<td>-The student is participating in a small group (6 or less) not based on any explicit ability differences -The student changes groups within the lesson</td>
<td></td>
<td>-The student is participating in a small group (6 or less) based on explicit ability differences -The student is participating in a large groups (6 or more) or as part of a whole class activity</td>
</tr>
<tr>
<td>Timing</td>
<td>-The student has the flexibility to practice, progress, plan or evaluate at his/her own pace</td>
<td>-The student is inactive (not involved in planning, performing or evaluating)</td>
<td>-The student does not have the flexibility to practice, progress, plan or evaluate at his/her own pace</td>
</tr>
</tbody>
</table>
Motivational Climate

The Perceptions of a Physical Education Teacher’s Emphasis on Achievement Goals Questionnaire at the Contextual Level of Generality (PETEAGQ-CLG) measures enduring student perceptions of the four support goals mastery approach (e.g., “Likes me to learn new skills and games to earn others’ acceptance.”), performance-approach (e.g., “Encourages students to play better than others.”), performance-avoidance (e.g., “Often makes me worried if they say I am not capable in physical education.”), and social support (e.g., “Wants me to learn skills and games for which my classmates will accept me.”) as created by the teacher (Papaioannou, Milosis, Kosmidou, & Tisigilis, 2007). A mastery-avoidance subscale (e.g., “Often makes pupils worry if they do not improve at a skill or activity.”) (Spray & Warburton, under review) was added to the measure to ensure that all four goals in the 2x2 framework were assessed (Elliot & Church, 1997; Wang, Biddle, & Elliot, 2007). Alpha coefficients were used to establish internal consistency for each subscale in the original instrument and were .80, .73, .80, .86, respectively. Confirmatory factor analysis (CFA) and structural equation modeling (SEM) were employed to validate the questionnaire. Students responded to 24-items using the stem “My physical education teacher” on a five point Likert scale (1=Strongly Disagree: 5=Strongly Agree). Mastery and performance approach constructs were comprised of six items, five items only measured performance avoidance, and mastery avoidance was measured with four items.
Needs Satisfaction

The questionnaire used to measure needs satisfaction in this study was comprised of three separate subscales from previously established instruments (Blais, Vallerand, & Lachance, 1990; McAuley, Duncan, & Tammen, 1989; Ntoumanis, 2001; Richer & Vallerand, 1998; Standage, Duda, & Ntoumanis, 2005). Students responded to the autonomy (e.g., “I feel that I do PE because I want to.”) and perceived competence (e.g., “I am pretty skilled at PE) subscales using the stem “In this physical education class” as compared to “With the other students in this PE class I feel” which was used for items of the relatedness subscale (e.g., “Safe”). There were a total of 16-items (autonomy = 6-items, perceived competence = 5-items, and relatedness = 5-items) used to measure needs satisfaction and all were scored on a 7-point Likert scale (1=Strongly Disagree: 7=Strongly Agree). Most recently, Standage, Duda, and Ntoumanis (2005) established validity using confirmatory factor analyses (CFA) and internal consistency (α=.80, .87, .87) for each subscale, respectively.

Statistical Analysis

Data analysis will be conducted to establish and maintain the integrity of the data collected from both quantitative and qualitative measures. Analysis will begin by determining descriptive statistics and reliability coefficients for motivational climate, needs satisfaction, learned helplessness, and TARGET behaviors for teachers, classes, and individual students. Task, authority, recognition, grouping, evaluation, and timing variables (frequencies and duration) for both teachers and students will also be reported.
per session and as an overall average. Cronbach’s (1951) Alpha coefficients were computed for all questionnaires and compared against an established criterion for internal consistency. Reliability for video analysis will follow Morgan et. al’s (2005) protocol by analyzing preselected video samples. Discussion between researchers will ensure 100 percent agreement was reached on inter-rater (different observer) and intra-rater (same observer) reliability. Objectivity will be established after each observer’s score will be compared to three reference points (individual students) on separate occasions over the course of a two-week period. Within and between observations were then analyzed for observers until a minimum 80 percent agreement is obtained on all baseline references (Bakeman & Gottman, 1986).

A multivariate analysis of variance (MANOVA) determined the effects that the motivational climate, which is created by the teacher, has on the students’ TARGET behaviors, perceived motivational climate, and needs satisfaction. A MANOVA will also allow the investigation of if there were any significant interactions among the dependent variables and among the independent variables.
Results

The overall purpose of the current investigation was to determine the differences in student perceptions of a motivational climate (mastery or performance climate), basic needs (autonomy, competence, and relatedness), and needs support (autonomy support, competence support, and relatedness support) and total student time spent in either mastery behaviors or performance behaviors across the TARGET framework. Table 3 provides an overall summary (averaged across three lessons and 4 teachers) of descriptive statistics (means and standard deviations) for both teacher and student time spent in each TARGET behavior as well as student perceptions of physical education. In order to conduct the primary analyses six separate multivariate analysis of variance procedures were conducted with the independent variables (groups) being student perceptions and dependent variables (student outcomes) assessing time spent in mastery and/or performance (TARGET) behaviors. Follow-up procedures were conducted using simple planned contrasts as alternative hypotheses were analyzed.

Table 3. Descriptive

<table>
<thead>
<tr>
<th>DV</th>
<th>Teacher 1</th>
<th>Class 1</th>
<th>Teacher 2</th>
<th>Class 2</th>
<th>Teacher 3</th>
<th>Class 3</th>
<th>Teacher 4</th>
<th>Class 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Task 1</td>
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</tr>
<tr>
<td>MT1</td>
<td>23.78</td>
<td>0.00</td>
<td>21.74</td>
<td>4.86(3.30)</td>
<td>32.86</td>
<td>12.56(5.75)</td>
<td>72.78</td>
<td>13.66(7.51)</td>
</tr>
<tr>
<td>NT1</td>
<td>34.95</td>
<td>33.07(5.77)</td>
<td>21.70</td>
<td>23.35(9.33)</td>
<td>67.14</td>
<td>32.41(13.53)</td>
<td>0.00</td>
<td>40.90(9.93)</td>
</tr>
<tr>
<td>PT1</td>
<td>37.91</td>
<td>21.12(3.35)</td>
<td>56.56</td>
<td>8.96(3.76)</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Task 2</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>MT2</td>
<td>0.00</td>
<td>8.05(2.81)</td>
<td>47.38</td>
<td>14.58(8.80)</td>
<td>10.47</td>
<td>4.23(2.35)</td>
<td>16.63</td>
<td>13.03(7.47)</td>
</tr>
</tbody>
</table>

Table 3 provides an overall summary (averaged across three lessons and 4 teachers) of descriptive statistics (means and standard deviations) for both teacher and student time spent in each TARGET behavior as well as student perceptions of physical education. In order to conduct the primary analyses six separate multivariate analysis of variance procedures were conducted with the independent variables (groups) being student perceptions and dependent variables (student outcomes) assessing time spent in mastery and/or performance (TARGET) behaviors. Follow-up procedures were conducted using simple planned contrasts as alternative hypotheses were analyzed.
To determine group classifications for each of the perception variables
questionnaire subscale scores for were used to separate three equal groups and perform
all analyses. Mastery climate perception was determined by mastery (mastery approach
and avoidance) subscales and groups were classified as having low (<2.66), neutral (2.67-
3.06), or high (≥3.07) perceptions. Performance (performance approach and avoidance)
subscales were used to determine low (<2.05), neutral (2.06-2.58), or high (≥2.59)
performance climate perceptions. Basic needs (averaged across autonomy, competence,
and relatedness) groups were considered to have needs not met (<3.85), neutral (3.86-

<table>
<thead>
<tr>
<th>DV</th>
<th>Teacher 1</th>
<th>Class 1</th>
<th>Teacher 2</th>
<th>Class 2</th>
<th>Teacher 3</th>
<th>Class 3</th>
<th>Teacher 4</th>
<th>Class 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>PT2</td>
<td>87.94</td>
<td>44.61(6.37)</td>
<td>39.91</td>
<td>13.45(4.11)</td>
<td>82.72</td>
<td>37.93(10.99)</td>
<td>56.08</td>
<td>20.08(10.88)</td>
</tr>
<tr>
<td>Authority</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>MA</td>
<td>0.00</td>
<td>.23 (.296)</td>
<td>0.00</td>
<td>0.00</td>
<td>10.47</td>
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<td>23.81 (7.99)</td>
<td>72.30</td>
<td>30.39(5.46)</td>
<td>69.29</td>
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Note. DV = Dependent Variable; MT1 = Mastery Task 1; Teacher 1 average percentage of duration; NT1 =
Neither Task 1; PT1 = Performance Task 1; MT2 = Mastery Task 2; PT2 = Performance Task 2; MA =
Mastery Authority; PA = Performance Authority; MRE = Mastery Recognition/Evaluation; NRE = Neither
Recognition/Evaluation; PRE = Performance Recognition/Evaluation; MG = Mastery Grouping; PG =
Performance Grouping; MTim = Mastery Timing; NTim = Neither Timing; PTim = Performance Timing.
4.70), or met (≥4.71) during physical education. Finally, needs support groups were based on needs not being met (≤4.61), neutral (4.62-5.87), or met (≥5.88) as result of the teachers actions during physical education lessons. Table 4 provides the total student time spent in mastery and performance behaviors across all grouping categories.
<table>
<thead>
<tr>
<th>Table 4. Mastery and Performance Behaviors</th>
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<tr>
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<tr>
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</table>

Note: Mastery P = Mastery Climate Perception; Perf P = Performance Climate Perception; High = High perception; Neutral = average perception; Low = low perception; Needs = Basic Needs; Support = Needs Support; Met = Needs/Support were met; Neutral = Needs/Support were average; Not Met = Needs/Support were not met; MT1 = Mastery Task 1; PT1 = Performance Task 1; MT2 = Mastery Task 2; PT2 = Performance Task 2; MA = Mastery Authority; PA = Performance Authority; MRE = Mastery Recognition/Evaluation; PRE = Performance Recognition/Evaluation; MG = Mastery Grouping; PG = Performance Grouping; MTim = Mastery Timing; PTim = Performance Timing.
The statistical assumptions of multivariate normality and equality of covariance matrices were met for each of the dependent variables analyzed. Using Pillai’s trace, there were not significant differences between groups for either mastery climate $V = .112, F(10, 214) = 1.265, p = .252$ or performance climate $V = .179, F(10, 214) = 1.741, p = .060$ perceptions. However, the simple univariate planned contrasts indicated that there was a significant difference $F(2, 110) = 3.30, p = .04$ for groups perceiving a high mastery climate ($m = 15.70$ minutes) when compared to groups perceiving a low mastery climate ($m = 23.60$ minutes). Planned univariate contrasts for a performance climate perceptions also indicated significant differences for times spent performance task $1 F(2, 110) = 5.26, p = .001$ and performance grouping $F(2, 110) = 8.37, p < .001$. Groups perceiving a high performance climate ($m = 10.57$ minutes) spent more time in performance task $1$ than groups having a low performance climate ($m = 3.75$ minutes) perception. Groups perceiving a high performance climate ($m = 32.68$ minutes) spent more time in performance grouping than those perceiving a low performance climate ($m = 16.46$ minutes).

Results from the analysis on differences between basic needs groups and student time spent in TARGET behaviors indicated no significant differences between groups for time spent in all mastery climate behaviors $V = .095, F(10, 214) = 1.069, p = .390$. Analysis of the univariate planned contrasts revealed that there were significant differences $F(2, 110) = 2.346, p = .033$ between neutral ($m = 4.15$ minutes) and needs met ($m = 1.76$ minutes) groups for time spent in mastery authority and significant
differences $F(2, 110) = 3.025, p = .016$ neutral ($m = 23.84$ minutes) and needs being met ($m = 15.72$ minutes) groups for time spent in mastery grouping. Overall, results basics needs groups and students time in performance climate behaviors were also not significant $V = .106, F(10,214) = 1.197, p = .294$ with no univariate planned contrasts indicating significant differences.

Summary results for needs support groups indicated that there were no significant results $V=.074, F(10,214) = 0.820, p = .610$ for students time across all mastery climate behaviors and no significant univariate planned contrasts. Needs supports groups were also not significant $V=.164, F(10,214) = 1.579, p = .090$ for time across performance climate behaviors. However, univariate planned contrasts were significant for performance task 1 $F(2, 110) = 2.729, p = .023$, performance task 2 $F(2, 110) = 3.812, p = .007$, performance authority $F(2, 110) = 4.354, p = .005$, and performance timing $F(2, 110) = 3.232, p = .016$. Student needs support perceptions were greater for met ($m = 10.20$ minutes) than neutral ($m = 5.42$ minutes) for performance task 1, groups with needs support met ($m = 34.94$ minutes) spent more time in performance task 2 than neutral perceptions ($m = 25.55$ minutes) of needs support, higher perceptions of needs support being met ($m = 47.20$ minutes) spent more time in performance authority than did neutral perceptions ($m = 39.65$ minutes), and needs support met ($m = 32.24$ minutes) spent more time in performance time and neutral perceptions ($m = 27.26$ minutes).
Discussion/Conclusions

The overall purpose of the current investigation was to determine the differences in student perceptions of a motivational climate (mastery or performance climate), basic needs (autonomy, competence, and relatedness), and needs support (autonomy support, competence support, and relatedness support) and total student time spent in either mastery behaviors or performance behaviors across the TARGET framework. The structure of a physical education environment provides an opportunity for teachers to create a specific climate that is most conducive to learning and provides experiences of feeling autonomous, competent, and related to the lesson (Byra & Coulon, 1994; Hall & Smith, 2006; Housner & Griffey 1985, Treasure & Roberts, 1995). However, results from the current investigation suggested that both teacher and student patterns of behavior as well as perceptions within the physical education environment interpreted performance climate as satisfactory. The content of the observed lessons were comparative or norm-referenced with the primary focuses being on the content of traditional sports and physical fitness rather than the transfer of these skills throughout life (Thompson, 1998; Williams, 1992). As a physical education teacher, it is important to guide students through the process to become a physically active individual for a lifetime (Graham, Holt-Hale & Parker, 2010; Ward & Pellet, 2012).

The research previously conducted within physical education had primarily focused methods on separating quantitative and qualitative measurements and only using one of the two to determine the differences in student behaviors or student perceptions.
The current study was the first within the physical education setting that analyzed both perception as well as behavioral data within the same participants to determine any differences in time spent in a mastery or performance oriented climate as well as their perceptions of the motivational climate and the amount of needs satisfaction and needs support within a lesson. Previous research utilizing the TARGET model to observe and analyze behavioral data point to the idea that designing a lesson plan to reflect a mastery oriented climate to promote mastery behaviors by the teacher and students will in turn lead to enhanced needs satisfaction and more needs support (Blumenfeld, 1992; Epstein, 1989; Morgan, Kingston, & Sproule, 2005; Roberts & Treasure, 1992; Treasure, 2001; Treasure & Roberts, 1995). The same research also indicated that a performance-oriented climate reflecting performance behaviors from the teacher and student would hinder needs satisfaction and lead to less needs support (Ames, 1992a; Morgan, 2005; Nicholls, 1989; Treasure, 2001). Previous research utilizing the perception questionnaires analyze how the student’s perception influences their motivation, through perceived needs satisfaction and needs support, to participate within the lesson. These studies indicated that when a student perceives a mastery, or self-referenced, climate, they tend to perceive that their needs are satisfied and that there is adequate needs support being provided (Ames, 1992; Deci & Ryan, 2000; Epstein, 1989; Morgan, 2005). The same research indicated that students who perceive a performance-oriented climate perceive less needs satisfaction and less needs support throughout the lesson (Morgan, 2005; Morgan & Carpentar, 2002; Nicholls, 1984; Solmon, 1996). None of these previous studies have used both perception questionnaires and TARGET (behavioral) data to determine
differences in student and teacher behaviors and perceptions. The current study, however, did use both methods of measurement and concluded that teacher and student behaviors and perceptions interpreted a performance climate as satisfactory. This is the first study to use both perception data, from the questionnaires, and behavioral data, from coding observational analysis, to determine differences in time spent in certain motivational climate behaviors and perceived needs satisfaction and needs support based on the student’s perceived motivational climate.

Williams (1992) has provided insights into many activities that are common in traditional physical education classes and suggested that these activities are unworthy of learning and resemble traditional games and activities that should be eliminated from school based curriculums. Many physical education programs are still using a majority of these games and activities and the main concern is that the games are too comparative in nature or contain too much inactivity during the game itself (Ward & Pellet, 2012). Physical education has traditionally included highly competitive activities and games that have outcomes related to winning by outperforming others. Since skills levels in classes have a high degree of variability student competence depends on unrealistic reference points from highly skilled students perceive that physical education is a competitive environment preventing their needs have been met. Since each student’s reference is based on comparison they interpret success as outperforming others and develop maladaptive cognitive and affective processes that prevent students from developing adaptive cognitive and affective processes to facilitate learning.
Contrary to research findings, the current investigation data suggested that student perceptions interpret the motivational climate as being performance-based and that many students’ psychological needs as well as behavioral patterns were met in a comparative environment. One plausible explanation may be that social norms within physical education have acclimatized students to norm-referenced comparisons and as a result they perceived winning and losing as normal. These results also suggest student perceive basic needs and needs support being met within physical education when lesson goals focus on winning and losing. However, research indicates that what is normal within physical education environments prevents healthy processes such as improvement, learning, and mastery of tasks which are critical for sustained lifetime activity.

TARGET

According to the results of this systematic observation, the number of basic needs met and the amount of needs support provided were greatly influenced by the individual student’s overall climate perception. Data suggested that students with high performance climate perceptions were more likely to indicate that basic needs and needs supported (by the teacher) as being met. These findings were contrary to previous research, as previous studies have found that students within basic needs are met and needs support is provided when a student perceives a mastery climate and a performance climate tends to lead children to avoidance behaviors and do not perceive their needs as being met or having enough needs support (Ames, 1992a; Morgan, 2005; Nicholls, 1989; Treasure, 2001). Performance climates generally lead to less needs satisfaction and less needs support, but
this was not the case in the current study (Ames, 1992a; Morgan, 2005; Nicholls, 1989; Treasure, 2001). The current investigation’s findings were reflective of what should have been seen as a result of a mastery climate, however, the students who perceived to have their needs met and have sufficient needs support were the students who perceived the climate as performance rather than mastery. The TARGET model provided a systematic method to conduct observations and report what was happening during lessons to influence student perceptions. Teachers being observed in the current investigation focused on designing lessons focused on the student performance, rather than the learning. Studies conducted in physical education using the TARGET model have found more positive outcomes related to mastery climate perceptions and more negative outcomes associated with performance climate perceptions. Since the purpose of the current investigation was to connect perceptions (cognition and affect) to behaviors influencing the students’ perceptions of the climate using this model to evaluate behaviors could be a possible reason this research studies’ findings were different than past studies (Morgan, Kingston, & Sproule, 2005; Roberts & Treasure, 1992; Treasure & Roberts, 1995). When using the TARGET model to observe student behaviors, past research shows that the student’s perception is influenced to perceive the climate as mastery since they perceive their needs as being met and enough needs support (Ames, 1992b; Epstein, 1989; Treasure, 2002; Treasure & Roberts, 1995).
Basic Needs and Needs Support from TARGET

Task

When a teacher structures a lesson using TARGET, they have the ability to manipulate the motivational climate, influencing if the students perceive both their basic needs as being met and that they have sufficient needs support from the lesson (Ames, 1992; Deci & Ryan, 2000; Epstein, 1989; Morgan, 2005). The tasks throughout a physical education lesson can be self-referenced which will help the students develop competence with the specific tasks (Nicholls, 1984). Students observed in the current investigation used self-referencing goals to complete tasks for a short period of time, however, their reference point in many instances were peers which is considered to be a performance climate. When individual’s perceived mastery climates, research indicates that basic needs are being met and that they are being provided sufficient needs support. This perception is representative of tasks designed to reflect a mastery climate, however, this research found students who had this perception were perceiving a performance climate. Generally, when students attempt to improve on self-referenced goals, they perceive the motivational climate to be mastery, however the current studies’ students self-reference was their previous experience with physical education which was competitive based and not truly self-referenced, or developing, rather than demonstrating competence (Ames, 1992b; Epstein, 1989; Treasure, 2002; Treasure & Roberts, 1995). Manipulating the task in a lesson can allow for all three basic needs; autonomy, competence, and relatedness, to be met and allows for sufficient autonomy support,
competence support, and relatedness support (Ames, 1992; Deci & Ryan, 2000; Epstein, 1989; Morgan, 2005).

**Authority**

The teacher that allows for students to have some authority throughout the lesson by being involved with decision-making leads to enhanced autonomy within the classroom, leading to increased motivation to participate in the future (Blumenfeld, 1992; Treasure, 2001). Adjusting the amount of authority a student has within a lesson has a direct effect on their perceived sense of autonomy and how much autonomy support they perceive to receive during the lesson. Physical education teachers can also adjust the number of decisions (autonomy) a student has by allowing them to be involved in leadership roles through the lesson (Ames, 1992b; Epstein, 1989; Treasure, 2002; Treasure & Roberts, 1995). When the teacher manipulates authority, the student’s basic need for autonomy will be enhanced as the student is provided with more autonomy support enabling the student to be more independently involved with the PE lessons. During the lessons observed teachers spent most of the time in performance authority giving students few opportunities to participate in their own decisions for learning. Research indicates that students who have lower levels of autonomy are less likely to be motivated to participate (Deci & Ryan, 2000; Standage, Duda, & Ntoumanis, 2005).

**Recognition/Evaluation**

If a teacher provides feedback to a student during a lesson, the teacher is directly manipulating the amount of recognition and evaluation that he/she is giving to students.
A teacher can evaluate the ability of a student based on self-referenced goals or comparative goals, but either way has a direct influence on the student’s perception of competence (Treasure, 2001). When a teacher gives a student verbal feedback, the student is generally receiving immediate feedback about their performance, influencing the amount of competence the student will feel for whichever activity or skill they received recognition or evaluation for. Manipulating the amount of recognition and evaluation the teacher gives will have a direct influence on the student’s perception of their basic need of competence being met and will influence the amount of competence support the student perceives. During the current investigation teachers provided little to no specific feedback throughout the lesson which has the potential to influence an individual’s competence and students who feel or think they are less competent are not motivated during lessons.

**Grouping**

How students are grouped throughout the lesson influences if their basic needs are met and if they receive sufficient needs support. When the students are grouped based on varying but equal skill levels or into small groups, the students generally perceive this as a mastery oriented climate. If students were grouped explicitly on ability level or into large groups, the students would perceive this as a performance oriented climate (Ames, 1992b; Epstein, 1989; Treasure, 2002; Treasure & Roberts, 1995). When grouping is manipulated within the lesson, this can have an influence on the student’s perception of how much relatedness they are experiencing with their group members and the physical
education lesson. A lesson where grouping is manipulated will result in both the student’s basic need of relatedness being met and perceiving that they are receiving relatedness support (Ames, 1992b; Epstein, 1989; Treasure, 2002; Treasure & Roberts, 1995).

**Timing**

Throughout a lesson, the pace and allotment of time to develop skills and participate in activities significantly influences a student’s motivation (Ames, 1992a; Treasure, 2001). A teacher can allow for ample amount of time for the students to develop skills and explore physical movements, or the teacher can constrain the time and does not allow for much time to develop skills independently (Ames 1992a; Treasure, 2001). When a student is allowed to work at their own pace, they would generally perceive a sense of autonomy and a development of competence for that skill/activity. Being allowed to work at own pace gives the students a sense of independence in regards to that skill and allowing for ample time would more likely allow for more practice attempts, which would lead to an enhanced sense of competence. When a PE teacher manipulates timing within a lesson, they can directly influence a students perception of their basic needs of autonomy and competence being met, and the students also perceive that there is a sufficient amount of autonomy support and competence support (Ames, 1992a; Treasure, 2001).
Skill Level

Within the performance perceived climate, the results from the current study showed that the students with high climate perception also had their needs support and basic needs met. This is opposite of what the researchers hypothesized. The reason the researchers might have seen this is that the students with high performance climate perception whose needs and support were met could possibly be the group that would be highly skilled. Highly skilled students generally enjoy physical education, so they’re going to perceive things differently than the less skilled students. Higher skilled students aren’t going to need as much support from the teacher and they’re going to want competition because that is what they are accustomed to and when they are out performing others, they’re going to perceive it as their needs being met and being supported. What the researchers discovered is that ‘highly met’ students perceive high support and high needs satisfaction. Students perceive PE to be competition and those who are highly skilled want to compete because this is what they have been exposed to and expect from further PE lessons.

These findings were opposite of what was originally hypothesized which suggests that there was another important variable involved with this population. Ideally, the students who’s needs support and basic needs were met should have had a high mastery climate perception, however these results suggested that a high performance climate perception also resulted in both needs support and basic needs being met.
Limitations

The purpose of the study was to examine students’ average duration spent in each behavior, across the TARGET framework, over three total class observations. Student attendance was inconsistent throughout the study. Approximately 5% of the students only attended 1 class session and approximately 10% of the students only attended two of the class sessions. This would affect the average for duration spent in each TARGET behavior, which could have a significant effect on the results. Another limitation was technical problems with recording equipment in terms of audio and being able to clearly hear interactions between the teacher and students. On ten to twelve occasions the teacher might have turned off the microphone or there may have been fuzzy noise coming through the microphone so the type of feedback that was delivered could not be coded. Feedback intervals generally occurred for approximately 3 to 10 seconds, and loss of audio could have lost a complete recognition/evaluation coding occurrence. This would affect the frequency and duration of recognition/evaluation within the lesson. A third limitation was executing the correct filming protocol at each observation session. The video recording protocol was to rotate across the entire class with 60 second durations between rotations across the observation area allowing for all students to be observed. Given the resources available, only one camera could be applied so the camera had to be rotated to view the entire class. The ideal protocol is that it would take one minute to rotate from one side of the frame to the opposite side, and a minute to get back to the other side of the frame. Students were off camera generally 35-50% of the time, which is
time when the climate could have been changed, but would have not been accounted for since the student was off camera and could not be coded at that time. Generally the climate would not change within the time that a student is coded as off camera, but this is something that must be accounted for as a limitation.

**Future Recommendations**

Based on the current findings of teaching behaviors and student responses future research should focus interventions on accounting for skill level when creating lesson plans to best create a mastery climate. Treasure and Roberts (1995) discuss similar findings when they suggest that the teacher does have the ability to structure PE lesson plans in order to manipulate the motivational climate. Systematic observations of the relationship between teaching behaviors and student responses is a possible way to objectively observe and analyze teacher expectations, student organization, and feedback which all influence how motivated a student will be live a physically active lifestyle. A physical education teacher’s role is to teach students to be life long movers, and researching the impact of manipulating the motivational climate will allow for future PE teachers to successfully create a mastery climate by focusing on mastery TARGET behaviors.
References


