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The Student-Teacher Relationship: Impacting Student Intrinsic Motivation and Enjoyment in College Physical Activity Classes

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December 2017

To the Dean of the Graduate School:

We are submitting a thesis written by Tyler Wozniak entitled THE STUDENT-TEACHER RELATIONSHIP: IMPACTING STUDENT INTRINSIC MOTIVATION AND ENJOYMENT IN COLLEGE PHYSICAL ACTIVITY CLASSES. We recommend acceptance in partial fulfillment of the requirements for the degree of Master of Science in Sport and Fitness Administration through the Richard W. Riley College of Education.

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THE STUDENT-TEACHER RELATIONSHIP: IMPACTING STUDENT INTRINSIC
MOTIVATION AND ENJOYMENT IN COLLEGE PHYSICAL ACTIVITY CLASSES

A Thesis
Presented to the Faculty
Of the
Richard W. Riley College of Education
In Partial Fulfillment
Of the
Requirements for the Degree
Of
Master of Science
In Sport and Fitness Administration
Winthrop University

December, 2017

By

Tyler M. Wozniak

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Review of Literature Manuscript

The Importance of College Physical Activity Classes: Expanding Upon Students'

Motivation for Physical Activity by Examining the Role of Relatedness

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Abstract

This literature review provides an overview on the importance of physical activity classes in post-secondary education as a means to promote physical activity among college students (Teixeria, et al., 2012). Self-Determination (SDT; Deci & Ryan, 1985) will be used as a way to understand students' motivation for physical activity. Previous research in SDT indicates that within physical activity classes, individual competence along with autonomy-support creates a learning environment that is more conducive to higher levels of intrinsic motivation for students to be physically active (Ntoumanis, 2005). However, research on the psychological need of relatedness is lacking in contrast to competence and autonomy-support (Teixeira et al., 2012). Additionally, in concern to relatedness, the dynamic of the student-teacher relationship, and its role on students' motivation for physical activity within college physical activity classes, is often overlooked (Kim, Armstrong, & Edwards, 2015; Teixeira et al., 2012). This review will examine the role of relatedness, within the student-teacher relationship, as a means of increasing intrinsic motivation for physical activity among college students.

Keywords: Health/wellness, pedagogy, post-secondary education, self-determination, student-teacher relationship

The Importance of Physical Activity Classes in College

Regular physical activity is important for optimal mental and physical well-being for all ages (Teixeira, Carraca, Markland, Silva, & Ryan, 2012). Within the United States, requiring physical education in the elementary and secondary schools has been an effective way to promote physical activity levels in children and adolescents (Standage, Duda, Ntoumanis, 2006). Within post-secondary institutions, there is no standard physical activity requirement (Tracey, Taliaferro, & Kristjansson, 2017). This is troublesome because of the continued negative trend of physical activity among college students (Quartiroli & Maeda, 2016).

College is widely viewed as a time when physical activity levels for the majority of young adults begin to decline (Sparling, 2003). While multiple factors may contribute to this trend, lack of time is most commonly cited (Teixeira et al, 2012). Many college students have competing areas of their life (e.g., studying, extracurricular clubs, outside employment) which demand their attention and take away time that could be dedicated to physical activity. Academic responsibilities may be seen as a greater immediate priority than physical activity, thus allocating time for physical activity is seen as a hindrance to academic success. Therefore, students avoid physical activity as it takes away from the time spent on other functions (Teixeira et al., 2012).

Not prioritizing physical activity is counterintuitive when considering the positive effect it has on cognition. Cotman and Engesser-Cesar (2002) show that physical activity has a positive relationship with brain functions such as neuroplasticity and memory. Since academic success requires mental acuity and endurance, it is important for college

students and institutions to re-think the role of physical activity in higher education. In addition to impairing their mental acuity, and subsequent academic success; the decline in physical activity levels among college students is detrimental to their physical and psychological health (e.g., heart disease, high blood pressure, depression; Dakapan, Tuzun, & Eker, 2004). Thus, the importance of physical activity goes beyond the short-term effect of academic success, it also positively affects health and well-being (Dakapan et al., 2004).

One way to promote physical activity is to incorporate activity classes into the college curriculum (Teixeira et al., 2012). By requiring physical activity classes, college students will participate in regular physical activity. In addition, these classes can also provide students with tools to learn how to live a healthy and active lifestyle (Tracey et al., 2017), helping students to develop long-term healthy living habits (Sparling, 2003).

History of College Physical Activity Classes

Within the United States, physical activity classes have been part of the college curriculum since the end of the 19th century (Sparling, 2003). In 1883, the president of the Massachusetts Institute of Technology (MIT) incorporated gymnastics and physical training into MIT's undergraduate curriculum (Sparling, 2003). The majority of colleges and universities quickly adopted similar requirements, making physical activity classes a common requirement. However, from 1960 to 1990 the number of colleges requiring at least one physical activity class decreased from 90% to 65% (Sparling, 2003). The primary reason for the drastic decline was financial: administrators became unwilling or

unable to provide the necessary funding, resulting in the neglect and/or disestablishment of many physical activity programs (Sparling, 2003).

During the decades of declining physical activity classes across college campuses, obesity rates in young adults tripled (Ogden et al, 2002). To combat this alarming statistic the United States Department of Health and Human Services (2000) included physical activity as one of ten health indicators for the United States. Unfortunately, currently less than 50% of college students in the United States meet the recommended physical activity requirements (American College of Sports Medicine, 2011). This has spurred a physical activity renaissance in higher education, with more colleges and universities re-implementing their physical activity requirement: approximately 52% of higher education institutions in the United States now have a physical activity requirement (Tracy et al., 2017).

The positive association with increased physical activity patterns exhibited by students required to take a college physical activity class are significant (Tracy et al., 2017). Bebeley, Yi-gang, and Liu, (2017) concluded that requiring students to enroll in physical activity classes helps to reverse the negative trend in physical activity among college students. However, the requirement for college students to take on a physical activity class to fulfill their degree program may be associated with lower levels of intrinsic motivation for physical activity. As the students are no longer choosing to take the class because they want to, but rather because of a requirement, creating an external locus of motivation to participate in the class. Therefore, understanding college students' motivation towards physical activity will help maximize the effectiveness of physical

activity classes to promote short- and long-term physical activity beyond the completion of the class (Tracy et al., 2017).

Overview of Self-Determination Theory

Self-Determination Theory (SDT; Deci & Ryan, 1985) is a popular theoretical framework to identify and explain the underlying motivation to be physically active (Deci & Ryan, 1985; Edmunds, Ntoumanis, & Duda, 2007; Teixeira et al., 2012). The theory is based on how the satisfaction of three psychological needs (i.e., competence, autonomy, and relatedness) influence an individual's motivation towards a behavior (Deci & Ryan, 1985). The psychological need of competence refers to a person's ability to be effective in producing desired outcomes over undesired outcomes. Autonomy reflects an individual's desire to engage in an activity through his or her own choice. Lastly, relatedness refers to an individual's sense of belonging and security within the social environment in which the given behavior takes place.

Self-determination Theory divides motivation along a continuum into the three broad categories: Amotivation, extrinsic motivation, and intrinsic motivation. Amotivation is a complete lack or non-existence of motivation (Sibley, Hancock, & Bergman, 2013). For example, a student that sees no reason for doing the physical activity and considers it a useless activity. Extrinsic motivation is characterized by factors outside of oneself; it is subdivided into the four additional categories: external regulation, introjected regulation, identified regulation, and integrated regulation (Ryan & Deci, 2000). External regulation is defined through the avoidance of punishment or the pure

obtainment of rewards (DeLong, 2006). This could be described as a college physical activity student participating in class solely for the obtainment of the grade that comes with successfully completing the class. Introjected regulation is fueled by worries of how one will be perceived by others if the behavior is not fulfilled (Tracy et al., 2017). This could be seen as a college physical activity student partaking in a class because their friends all signed up for the same class, and the student is worried that their friends will disapprove if he or she does not enroll in it. Identified regulation is motivation based off of a value system where one's action is motivated through the inherent value of the activity (DeLong, 2006). For example, a college student deciding to partake in a physical activity class because he or she believes that the value in physical fitness gained by participating in class are important for their development. Finally, integrated regulation is when the activity becomes a part of one's self understanding and daily practice (Ryan & Deci, 2000). This could be seen as a college student continuing to be physically active after graduating because the behavior has become a part of that student's self-understanding and identity.

While integrated regulation fulfills the psychological needs of competence, autonomy, and relatedness, it is considered to be extrinsic because the behavior is still performed outside of "sheer enjoyment of the behavior" (Tracey et al, 2017). Intrinsic motivation is to perform a behavior out of pure enjoyment and self-fulfillment and no other outside reason (Ryan & Deci, 2000). An example of this would be a college student engaging in physical activity because they enjoy it. In SDT, it is the satisfaction of the three psychological needs of competence, autonomy, and relatedness that determine an

individual's motivation for a particular behavior. Teixeira et al. (2012) showed that adults who have their psychological needs fulfilled during physical activity have higher levels of intrinsic motivation.

Satisfaction of Psychological Needs in Physical Activity Classes

Self-determination Theory has been heavily researched within the context of elementary and secondary physical education, specifically in regards to how these classes impact students' motivation for physical activity (Kim, Cardinal, & Yun, 2015).

However, there is little research on SDT within the context of college physical activity classes (Kim et al., 2015). This could potentially be related to the decline in college physical activity classes over the last several decades (Sparling, 2003). However, results found in research conducted in elementary and secondary physical education classes can be informative, and partially generalizable, to college physical activity classes. They may be used as a way to better understand a student's motivation for physical activity in a classroom context.

Physical activity teachers play an integral role in cultivating their students' psychological needs through their interactions with the students. Ntoumanis (2005) examined the motivational variables in high school students' cognitive and affective experiences in their physical activity classes. Results found that teachers who supported the students' psychological needs of autonomy, competence, and relatedness were more likely to have students that would be active participants in their physical activity classes.

Furthermore, Standage, Duda, and Ntoumanis (2006) found that autonomy supportive teachers (e.g., gives students freedom to make decisions) had students with higher levels of intrinsic motivation than autocratic teachers (e.g., makes decisions for the students undermining their ability to create their own choices). The researchers also suggested that competence was the strongest predictor for students' self-determined motivation because being competent at a certain behavior elicits a feeling of success, and thus motivates someone to repeat that behavior in order to obtain the feeling of success again (Standage, Duda, & Ntoumanis, 2006).

The impact that perceived autonomy has on college students' motivation for physical activity in their physical activity classes is also significant. Tracey et al. (2017) examined the role of choice on college student's motivation for exercise in their physical activity classes. Results indicated that students who made their own choices and self-directed their exercises had significantly higher levels of self-determined motivation for exercise than students who were not given the same autonomy support by their teachers. Students in the autonomy supportive classes found that having their own choice on physical activity helped them to choose exercises that better aligned to their individual goals. While students without autonomy were demotivated to partake in class, preventing them from achieving their individual goals (Tracey et al., 2017).

Thus, instructors in college physical activity classes may also play a large role in supporting their students' psychological needs through their relationships. This can be seen in the way they build competence and provide autonomy to their students. This type

of teaching may foster a sense of relatedness between the students and their teachers that could improve intrinsic motivation for physical activity.

Psychological Need of Relatedness on Physical Activity

Within SDT research, the psychological needs of autonomy support and competence have been widely reviewed in relation to how they influence the intrinsic motivation of individuals to be physically active. However, the psychological need of relatedness is lacking in contrast to the evidence and prevalence of the other two psychological needs. Teixeira et al (2012) conducted a systematic review and meta-analysis of 66 SDT studies that included 72 independent samples on adults' self-determined motivation to be physically active. Within this systematic review, the psychological need of relatedness was assessed the least (53%) in comparison to competence (82%) and autonomy (65%). Moreover, the review examined the strength of multivariate association and correlation analysis for each psychological need on physical activity. In regards to multivariate association, competence (+56%) and autonomy (+20%), had positive associations, while relatedness had no multivariate association with physical activity. In regards to correlation analysis, when assessed for a positive correlation with physical activity, competence (92%) and autonomy (50%) had stronger outcomes overall than relatedness (38%). There was no negative association with relatedness and physical activity.

The evidence in Teixeira et al (2012) systematic review may lead to a conclusion that relatedness plays a smaller role in self-determined motivation for physical activity than the other psychological needs. However, a majority of the participants were

exercising independently on their own. Perhaps the role of relatedness on physical activity would become more prominent if it were examined in the context of a group setting, such as a physical activity or group-fitness class, where a participant's motivation for physical activity could be more influenced by the student-teacher relationship. As previously mentioned, Ntoumanis (2005) showed that teachers play a crucial role in facilitating the satisfaction of psychological needs for students, including the need of relatedness. Furthermore, Standage et al (2006) postulated that further consideration into the social support factors for the psychological need of relatedness, such as the student-teacher relationship, could yield a greater understanding into what creates a “healthy” environment for a physical activity class.

The Student-Teacher Relationship

Research has demonstrated that the nature of the relationship between a student and their teacher can have a profound impact on each student’s motivation, grades, adherence (i.e., attendance and participation), and overall academic success (Kim, Armstrong, & Edwards, 2015). Wilkins (2014) examined teachers’ perspectives for which student behaviors led to a good student-teacher relationship. Results indicated that having a sense of humor (i.e., understanding the teacher’s humor), showing respect, trying hard in class (i.e., showing enthusiasm), and talking to the teacher outside of the classroom context positively influenced the student-teacher relationship.

Although it is important, the student-teacher relationship is hard to quantify because it is complex and multifaceted. The Model of Interpersonal Teacher Behavior (MITB) is recognized as a valid way to capture the student-teacher relationship

(Wubbels, Creton, & Hooymayers, 1985). The MITB has two dimensions, influence and proximity. Influence is categorized on the vertical axis as dominance and submission while proximity is categorized on the horizontal axis as opposition and cooperation. Within these two dimensions exists eight subcategories of teaching styles: leadership, helping/friendly, understanding, student responsibility/freedom, uncertain, dissatisfied, admonishing, and strict.

There is only one known research study using the MITB within the context of SDT. Maulana, Opendakker, Brok, and Bosker (2011) found no significant relationship between the student-teacher relationship (measured using the MITB) and intrinsic motivation. The authors were uncertain as to why this occurred.

In addition to the limited research on the MITB and SDT, there is little known about the association between the psychological need of relatedness and the student-teacher relationship, especially in regards to college physical activity classes. Kim, Armstrong, and Edwards (2015) examined student-teacher relationships and college outcomes for students (i.e., GPA, critical thinking skills). Ultimately, they found that the student-teacher relationship has a profound effect on the student's sense of psychological security within the classroom environment, influencing motivation to participate and attend class. The researchers stressed that the impact of the student-teacher relationship varies depending on the academic discipline; therefore, it can be assumed that examining this relationship in the context of a college physical activity class could differ.

Conclusion

College physical activity classes are important to examine because they provide college students an avenue in which to be physically active. Regular physical activity is important for physical and mental well-being (Teixeira et al., 2012). Currently, due to time constraints, the majority of college students do not prioritize physical activity; one reason is that it is seen as a barrier to their academic responsibilities (e.g. studying, projects, and student organizations). However, participation in college physical activity classes could improve cognitive function and academic success, as well as positively influence a student's long-term motivation and habits towards physical activity (Sparling, 2003).

Self-determination theory is a reliable theoretical framework to understand college students' motivation for physical activity (Tracey et al., 2017). Previous research has shown that physical activity teachers who support the psychological needs of competence and autonomy increase intrinsic motivation to be physically active among their students (Tracey et al., 2017; Ntoumanis, 2005; Standage et al., 2006). The psychological need of relatedness, however, is less prevalent in SDT research (Teixeira et al., 2012). In order to gain a better understanding on the role of relatedness in college students' self-determined motivation for physical activity, further research needs to explore the social environments of college students being physically active in group contexts (Teixeira et al., 2012), such as physical activity classes.

One possible strategy to capture the role of relatedness is to examine it from the students' perception of the student-teacher relationship. There is limited research examining the student-teacher relationship and self-determined motivation in college

physical activity classes (Kim et al., 2015). Research is necessary to identify the different types of relationships that students perceive they have with their physical activity teachers, and whether these relationships affect the students' motivation to be physically active. This is important because physical activity classes have the potential to establish lifelong physical activity habits. Therefore, understanding how the student-teacher relationship can directly contribute towards this outcome is paramount in reducing sedentary lifestyles.

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Main Study Manuscript

The Student-Teacher Relationship: Impacting Student Intrinsic Motivation and
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Abstract

The purpose of this research was to examine the association between the student-teacher relationship and the intrinsic motivation for physical activity exhibited by students ($n = 127$) in college physical activity classes. Regression analysis found that the student-teacher relationship was unrelated to the psychological need of relatedness. However, specific types of teacher behaviors within the student-teacher relationship were significant predictors of intrinsic motivation. The student teacher relationship behavior of understanding was positively related to intrinsic motivation for physical activity ($\beta = 0.20, p = .01$) while being dissatisfied was negatively related ($\beta = -0.56, p = .01$). Additionally, the teachers that students perceived as leaders ($\beta = 0.42, p = .0001$) and being helpful/friendly ($\beta = 0.23, p = .02$) were positively associated with the students' sense of value/usefulness of the physical activity class. These results provide evidence to enhance outcomes of motivation in students and teacher performance for college physical activity classes.

Keywords: Health/wellness, pedagogy, post-secondary education, relatedness, self-determination.

Introduction

Regular physical activity is important to achieve and maintain mental and physical well-being (Teixeira, Carraca, Markland, Silva, & Ryan, 2012). There are numerous benefits of regular physical activity including the promotion of healthy musculoskeletal structure, decreased risk of obesity and hypertension, encouraged social wellbeing, and improved mental health (US Department of Health and Human Services, 1996). Despite these many benefits, college is widely viewed as a time when physical activity levels begin to decline (Sparling, 2003). The sedentary demands placed upon college students (e.g., attending class, studying, extracurricular clubs, jobs) take away time for physical activity. Interestingly, students may feel that allocating time for physical activity is a hindrance towards academic success (Teixeira et al., 2012).

One strategy to increase physical activity among college student is to incorporate activity classes in the college curriculum (Teixeira et al., 2012). Not only will these classes provide the time to be physically active, they may also provide students with tools to learn how to live a healthy and active lifestyle (Tracey et al., 2017). Thus, physical activity classes have the potential of creating, developing, and maintaining healthy habits that extend beyond a student's time in class (Sparling, 2003). However, simply providing an opportunity to be physically active does not guarantee that the students will actually exhibit the behaviors of physical activity or develop lifelong healthy habits.

Understanding college students' motivation towards physical activity will help maximize the effectiveness of physical activity classes to promote short- and long-term physical activity (Tracy et al., 2017).

Self Determination Theory

Self-Determination Theory (SDT; Deci & Ryan, 1985) is a popular motivational theory commonly used to identify and explain an individual's underlying motivation to be physically active (Deci & Ryan, 1985; Edmunds, Ntoumanis, & Duda, 2007; Teixeira et al., 2012). The theory is based on how the satisfaction of three psychological needs (i.e., competence, autonomy, and relatedness) influence an individual's motivation towards a behavior (Deci & Ryan, 1985). The psychological need of competence refers to a person's capability to effectively produce wanted outcomes over unwanted outcomes. Autonomy reflects an individual's choice to engage in a behavior. Lastly, relatedness refers to an individual's sense of closeness and belonging within the social context that the behavior takes place in.

Within SDT research, the psychological needs of autonomy support and competence have been widely reviewed in relation to how they influence physical activity (Standage, Duda, & Ntoumanis, 2006; Ntoumanis, 2005; Tracey, Taliaferro, & Kristjansson, 2017). However, compared to competence and autonomy, there is limited research on the psychological need of relatedness. Teixeira et al (2012) conducted a meta-analysis and systematic review on adults' self-determined motivation to be physically active. Within their systematic review, the psychological need of relatedness was assessed the least (53%); it was overshadowed by competence (82%) and autonomy (65%). The researchers postulated that a majority of individuals exercise independently, explaining the limited scope of relatedness in the literature. Perhaps the role of relatedness on physical activity would become more prominent if it were examined in the

context of a group setting, such as a physical activity or group-fitness class, where a participant's motivation for physical activity could be more influenced by the dynamic of the student-teacher relationship.

The Student-Teacher Relationship

Kim et al. (2015) examined student-teacher relationships and student academic outcomes (i.e., GPA, critical thinking skills). Ultimately, they found that the student-teacher relationship strongly affected a student's sense of psychological security within the classroom environment, which influenced motivation in class. Kim et al. (2015) suggested that the impact of the student-teacher relationship varies depending on the academic discipline. Therefore, examining this relationship in the context of a college physical activity class could help improve understanding surrounding student motivation to be physically active. Thus, the purpose of this study is to examine how the student-teacher relationship impacts a student's intrinsic motivation to be physically active, and particularly the role of relatedness.

Methods

Participants

As shown in Table 1, 127 undergraduate students participated in the study. All participants attended the same liberal arts university in a southeastern university region of the United States. The majority of the participants were female ($n = 91$, 72%), Caucasian ($n = 71$, 56%), 19 years old ($n = 42$, 33%), and freshman ($n = 60$, 47%).

Measures

Questionnaire of Teacher Interaction. The Questionnaire of Teacher Interaction (QTI) evaluated the student-teacher relationship (Fisher, Fraser, & Cresswell, 1995). This questionnaire has 48 statements about the teacher's behavior as perceived by the student. The participants ranked how often the teacher exhibits the behavior in class from never (0) to always (4). An example statement is, "This teacher has a sense of humor."

The QTI measures the student perception of teaching style, captured within the Model of Interpersonal Teacher Behavior (MITB; Wubbels, Creton, & Hooymayers, 1985). The MITB has two dimensions, influence and proximity. Within the dimensions of influence and proximity, exist eight subcategories of teaching behaviors: leadership, helping/friendly, understanding, student responsibility/freedom, uncertain, dissatisfied, admonishing, and strict. Within the QTI, each question represents one of the eight subcategories of teaching behaviors. Each subcategory is calculated independently by taking an average of the scores.

Intrinsic Motivation Inventory. The Intrinsic Motivation Inventory (IMI) examined the student's intrinsic motivation for physical activity in the class. This questionnaire consisted of 45 statements; the participant indicated how strongly they agree with the statement from not true at all (1) to very true (7). An example item out of the relatedness section is, "I felt like I could really trust this person."

The IMI measures seven subcategories of intrinsic motivation (interest/enjoyment, perceived competence, effort/importance, pressure/tension, perceived choice, value/usefulness, and relatedness). The current study used the

subcategories interest/enjoyment, value/usefulness, and relatedness. To score the IMI, each subcategory is calculated independently by taking an average of the scores.

Procedure

Institutional Review Board approval and participant consent were obtained prior to the start of the study. Participants were recruited by the researcher from 12 physical activity courses: Aerobic Walking, Cardio Kick, Global Games, Beginner Racquetball, Martial Arts, Outdoor Hiking/Rafting, Power Yoga, Scuba Diving, Volleyball, Weight Training, Water Aerobics, and Yoga. Within the first two weeks of class, each student was asked to participate by completing a pre-study IMI and a brief demographic questionnaire. During the last month of the class, each participant completed the QTI and post-study IMI. All measures were completed online using Qualtrics software (Provo, UT).

Data Analysis

Descriptive statistics were computed for the sample. Multiple linear regression was used to examine the association between the student-teacher relationship and student's intrinsic motivation for physical activity. Individual linear regression models were computed for each of the post-study IMI subcategories (interest/enjoyment, value/usefulness, and relatedness) with each subcategory of the QTI. Each model controlled for the appropriate pre-IMI subcategories and demographic variables. All

analyses were conducted using R (version 3.1.1). Statistical significance was set at $p < 0.05$.

Results

Relatedness

There were no significant associations between post-study IMI relatedness and the QTI subcategories.

Value/Usefulness

The QTI subcategory helping/friendly ($\beta = 0.23$, $p = 0.02$, 47% of variance), leadership ($\beta = 0.42$, $p = .0001$, 51% of variance), and strict ($\beta = 0.25$, $p = 0.04$, 46% of variance) were significant predictors of post-study IMI value/usefulness. However, when the pre-study IMI value/usefulness was removed as a control, the scores dropped significantly - helping/friendly ($\beta = 0.23$, $p = 0.07$, 0.02% of variance), leadership ($\beta = 0.53$, $p = 0.0003$, 0.09% of variance), and strict (not significant). The remaining QTI subcategories did not have a significant association with post-study IMI value/usefulness.

Interest/Enjoyment

The QTI subcategory understanding ($\beta = 0.20$, $p = 0.01$, 69% of variance) was a significant predictor of post-study IMI interest/enjoyment. However, when the pre-study IMI interest/enjoyment was removed as a control, the score was insignificant. The QTI

subcategory dissatisfied ($\beta = -0.56$, $p = .01$, 69% of variance) was a significant negative predictor of IMI interest/enjoyment. However, when the pre-study IMI was removed as a control, the score dropped significantly ($\beta = -1.1$, $p = 0.005$, 0.06% of variance). The remaining QTI subcategories did not have a significant association with post-study IMI value/enjoyment.

Discussion

The purpose of this study was to examine the impact of the student-teacher relationship on a college student's intrinsic motivation to be physically active, with a specific focus on the role of the psychological need of relatedness. In regards to the student-teacher relationship, this study showed that there was no effect on relatedness. The results overall showed that a student's prior intrinsic motivation for physical activity was the primary indicator of intrinsic motivation for physical activity at the end of the class, not the student-teacher relationship. However, certain types of teacher behaviors within the student-teacher relationship were significant in predicting intrinsic motivation, particularly the value and usefulness of the physical activity class.

Results from this study indicated that pre-intrinsic motivation for physical activity was the greatest predictor of post-intrinsic motivation for physical activity. This finding supports prior research. Quartiroli and Maeda (2016) suggested that students who choose to enroll in physical activity classes are likely to have higher levels of intrinsic motivation for physical activity due to their interest in the subject. Additionally, Quartiroli and

Maeda (2016) suggested that students may overstate their interest in physical activity during pre-testing, creating a ceiling effect that makes it difficult to see a significant increase from pre- to post-test measurements. These findings suggest that while physical activity classes promote physical activity among the enrolled students, they may not yet significantly affect motivation for future physical activity.

Based on previous research, the inability for the student-teacher relationship to significantly impact relatedness agreed with previous research, as it has been seen to not be as impactful as competence or autonomy (Teixeira et al., 2012; Standage, Duda, & Ntoumanis, 2006; Ntoumanis, 2005; Tracey et al., 2017). Although the physical activity of this study was completed in group physical activity classes, relatedness may not have been an influential role because the role of the teacher may have been less impactful on a student's intrinsic motivation compared to his or her peers. For example, Vazou, Ntoumanis, and Duda (2005) found that positive peer-created motivational climates can influence an individual's physical activity. Furthermore, Kim, Cardinal, and Yun (2015), suggest that teachers can best support a student's sense of relatedness towards physical activity by creating a classroom environment that promotes social relationships with their peers.

Furthermore, Ryan and Deci (1985) characterize relatedness through closeness and security with the people involved in a certain environment. The students in this study may have also chosen to avoid any degree of closeness with their teacher, regardless of the behaviors of the teacher (e.g., viewed as helpful or strict), because they felt more close or secure among their peers. This contrasts with research examining the student-

teacher relationship from the teacher's perspective (Claessens et al., 2016 & Wilkins, 2014), where the relationship was judged based on the behaviors between the student and teacher (e.g. warm and open, conflictual and discordant). More research is needed to better understand the student-teacher relationship from the student's perspective, as it may impact the psychological need of relatedness differently than from the teacher's perspective.

An additional reason for the lack of significance with relatedness was the specific class content and structure. Students in classes that required more technique and/or independent activity may have relied more on competence or autonomy than on relatedness. For example, students in weight training may have been more motivated by mastering weight lifting techniques than on developing a relationship with their teacher. Finally, the present study defined the student-teacher relationship through the MITB, which may be a poor indicator of the psychological need of relatedness for physical activity within this sample.

Results from this study did find that certain behaviors within the student-teacher relationship increased general interest/enjoyment and value/usefulness. The student-teacher relationship behaviors of leadership and helping/friendly positively influenced a student's sense of value and usefulness for physical activity. Valuing physical activity is important because it may help build a positive view of physical activity. This reinforces Sparling's (2006) finding that physical activity courses are valuable and useful for college students, and inform teachers that leadership and helpful/friendly behaviors help promote a sense of value within their students. Additionally, these results indicate that not only do

teachers and administrators believe that these classes are important (Sparling, 2006), but students found them to be important and valuable as well.

The IMI subcategory interest/enjoyment is a proxy for an individual's overall level of intrinsic motivation towards the activity (Ryan, 1982). According to the results, a student's overall intrinsic interest (as measured by interest/enjoyment) in physical activity was positively influenced by an understanding teacher. On the other hand, intrinsic interest in physical activity was reduced if a student perceived the teacher as dissatisfied with him or her. These findings complement previous research examining the impact of teacher character traits, such as being autonomy supportive (e.g., allowing students to make their own choices) or autocratic (e.g., dictating choices for the students) on intrinsic motivation for physical activity. The trait of being autonomy supportive can be associated with the behavior of understanding, while the trait of being an autocratic teacher can be associated with the behavior of dissatisfaction (Ntoumanis, 2005; Standage, Duda, & Ntoumanis, 2006).

However, the results also expand the previous research because they explain the impact of the teachers' *behavior*, not just character traits. It is important to distinguish that the way in which a teacher behaves towards their students during physical activity could impact motivation differently than character traits. For example, an autocratic teacher could still promote intrinsic motivation for physical activity by displaying the behavior of understanding while a student is struggling to learn a physical activity skill (Kim, Cardinal, & Yun, 2015). Thus, physical activity teachers may need to be aware of the potential negative and positive behaviors they exhibit towards their students. Future

research is necessary to better understand the differences between a teacher's traits and behaviors in regards to building intrinsic motivation in physical activity classes.

Conclusion

This study explored the role of the student-teacher relationship in promoting a student's intrinsic motivation for physical activity, particularly the role of the psychological need of relatedness. Although the results found some positive associations between the student-teacher relationship and intrinsic motivation, relatedness was not significant. While the findings are valuable, they are not without its limitations. This study strived to include a diverse sample of physical activity classes and students. However, it consisted of participants from one university in the United States, potentially limiting its generalizability. In addition, the types of physical activity courses were not directly compared; however, the different activities may elicit varying levels of intrinsic motivation and teacher interaction. Future research should strive to build upon the results in the following ways: increasing the diversity of the sample, adding additional sites, comparing different types of physical activity courses, and comparing different characteristics of the instructors (e.g. gender, teaching experience, knowledge of the subject taught, personality traits, etc.)

Despite these limitations, this study adds to the SDT literature by revealing specific teacher behaviors within the student-teacher relationship that have an impact on a student's intrinsic motivation for physical activity. In addition, this research reinforces the idea that prior intrinsic motivation for physical activity may be the best indicator towards outcomes of intrinsic motivation within college-level physical activity classes.

Understanding college students' motivation towards physical activity can help to promote short- and long-term physical activity behaviors, which can improve physical and mental health along with academic success for college students (Sparling, 2003; Tracy, et al., 2017).

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Table 1	
<i>Participant Demographics</i>	
Variable	Results (%)
Gender	
Female	91 (72%)
Male	36 (28%)
Race/ethnicity	
African American	50 (39%)
Caucasian	71 (56%)
Other	7 (5%)
Age in years	
18	37 (29%)
19	42 (33%)
20	21 (16%)
21	14 (11%)
22+	14 (11%)
Type of Student	
Freshman	60 (47%)
Sophomore	26 (21%)
Junior	20 (15%)
Senior	21 (16%)
Other	1 (1%)

Appendix A**PARTICIPANT SURVEY**

1. What is your age?

2. What is your race? (Please check all those that apply)

<input type="checkbox"/> Caucasian	<input type="checkbox"/> African American/Black
<input type="checkbox"/> Hispanic/Latino	<input type="checkbox"/> Asian
<input type="checkbox"/> Middle eastern	<input type="checkbox"/> Pacific Islander
<input type="checkbox"/> Native American/Alaskan	<input type="checkbox"/> Other

3. What is your gender?

Male Female

4. What is your college standing?

Freshman Sophomore Junior Senior Other*

*If you answered "Other" to the above question, please provide your academic standing

Appendix B

THE POST-EXPERIMENTAL INTRINSIC MOTIVATION INVENTORY

For each of the following statements, please indicate how true it is for you, using the following scale:

1	2	3	4	5	6	7
not at all true			somewhat true			very true

Interest/Enjoyment

I enjoy this physical activity class very much
 On a daily basis, physical activity is fun to do.
 This physical activity class can be boring.
 This physical activity class does not hold my attention at all.
 I would describe this physical activity class as very interesting.
 I think this physical activity class is quite enjoyable.
 While I am in class doing physical activity, I am thinking about how much I enjoy it.

Perceived Competence

I think I am pretty good at this physical activity class.
 I think I do pretty well in this physical activity class, compared to the other students in this class.
 After practicing the physical activity in this class for a while, I feel pretty competent.
 I am satisfied with my performance as a student in this physical activity class.
 I believe I am pretty skilled at this physical activity class.
 Sometimes I am concerned that I am not very good at this physical activity class.

Effort/Importance

I put a lot of effort into being an effective student in this class.
 Some days I do not try very hard as a student in this class.
 I try very hard to be an effective student in this class.
 It is important to me to do a good job at being a student in this class.
 I don't put very much effort into being a good student in this class.

Pressure/Tension

I do not feel nervous during this physical activity class
 I feel tense when I am in this physical activity class
 I feel very relaxed while attending this physical activity class
 I feel anxious while participating in this physical activity class
 I felt pressured while participating in this physical activity class

Perceived Choice

I believe I have a choice to participate in this physical activity class

I feel like I am forced into participating in this physical activity class.

I didn't really have any other choice but to participate in this physical activity class

I felt like I had to be a student in this physical activity class

I participate in this physical activity class because I had no other choice of physical activity class to participate in.

I am a student in this physical activity class because I chose to be.

I became a student in this physical activity class because I had to.

Value/Usefulness

I believe learning new skills about physical activity could be of value to me.

I think that learning how to intrinsically motivate myself to engage in physical activity is useful for my career.

I think it is important to take a physical activity class because it can help me motivate my peers in a new way

I would be willing to take a physical activity class again because it has some value to me.

I think learning how to intrinsically motivate myself to engage in physical activity could help me improve my career.

Overall I believe learning a new way to motivate myself to engage in physical activity could be beneficial to me.

I think it is important to intrinsically motivate myself to engage in physical activity.

Relatedness

I felt really distant to my physical activity teacher.

I really doubt that my physical activity teacher and I would ever be friends.

I felt like I could really trust my physical activity teacher.

I'd like a chance to interact with my physical activity teacher more often.

I'd really prefer not to interact with my physical activity teacher in the future.

I don't feel like I could really trust my physical activity teacher.

It is likely that my physical activity teacher and I could become friends if we interacted a lot.

I feel close to my physical activity teacher.

Adapted from Plant & Ryan (1985).

Appendix C

QUESTIONNAIRE ON TEACHER INTERACTION

This questionnaire asks you to describe the behavior of your teacher. This is NOT a test. Your opinion is what is wanted.

This questionnaire has 48 sentences about the teacher. For each sentence, circle the number corresponding to your response. For example:

The teacher expresses himself/herself clearly.

0	1	2	3	4
Never				Always

Teacher's name _____ Class _____ School _____

1. This teacher talks enthusiastically about her/his subject. 2. This teacher trusts us. 3. This teacher seems uncertain. 4. This teacher gets angry unexpectedly
5. This teacher explains things clearly. 6. If we don't agree with this teacher, we can talk about it 7. This teacher is hesitant 8. This teacher gets angry quickly.
9. This teacher holds our attention 10. This teacher is willing to explain things again 11. This teacher acts as if she/he does not know what to do 12. This teacher is too quick to correct us when we break a rule
13. This teacher knows everything that goes on in the classroom 14. If we have something to say, this teacher will listen 15. This teacher lets us boss her/him around. 16. This teacher is impatient.
17. This teacher is a good leader. 18. This teacher realizes when we don't understand. 19. This teacher is not sure what to do when we fool around 20. It is easy to pick a fight with this teacher.
21. This teacher acts confidently. 22. This teacher is patient. 23. It's easy to make a fool out of this teacher.

24. This teacher is sarcastic
25. This teacher helps us with our work. 26. we can decide some things in this teacher's class. 27. This teacher thinks that we cheat. 28. This teacher is strict.

29. This teacher is friendly. 30. We can influence this teacher. 31. This teacher thinks that we don't know anything. 32. We have to be silent in this teacher's class.
33. This teacher is someone we can depend on. 34. This teacher lets us fool around in class. 35. This teacher puts us down. 36. This teacher's tests are hard.
37. This teacher has a sense of humor. 38. This teacher let us get away with a lot in class. 39. This teacher thinks that we can't do things well. 40. This teacher's standards are very high
41. This teacher can take a joke. 42. This teacher gives us a lot of free time in class. 43. This teacher seems dissatisfied. 44. This teacher is severe when marking papers.
45. This teacher's class is pleasant. 46. This teacher is lenient. 47. This teacher is suspicious. 48. We are afraid of this

Open-ended question

How would you describe the nature of your relationship with your physical activity teacher?