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The Effects of Relatedness Support on Motivational Profiles in
Rural vs. Urban Physical Education Students

Corbin D. Stringam

A thesis submitted to the faculty of
Brigham Young University
in partial fulfillment of the requirements for the degree of
Master of Arts

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ABSTRACT

The Effects of Relatedness Support on Motivational Profiles in Rural vs. Urban Physical Education Students

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Master of Arts

The purpose of this study was to examine the degree to which relatedness support affects motivational profiles in rural vs. urban physical education (PE) students. Participants included rural ($n=177$) and urban ($n=431$) junior high/high school students (grades 5-12) from Alberta, a western province in Canada ($n=508$), and Utah, a state in the intermountain west of the USA ($n=100$). This cross-sectional study measured and assessed students' basic psychological needs of student-to-student relatedness, student-to-teacher relatedness, competence, and autonomy using a revised version of the Basic Psychological Needs Scale (BPNS-R). Situational motivation was measured and assessed using the Situational Intrinsic Motivation Scale – Physical Education (SIMS-PE). For data analysis, MANOVA was used to examine significant differences among group variables (urban and rural, gender, and state) for selected variables (basic psychological needs indices and motivational indices).

Significant rural vs. urban effects were noted for basic psychological needs and reveal urban students as having significantly more student-to-teacher relatedness ($p = .032$), competence ($p = .001$), and autonomy ($p = .002$) than rural students. Significant rural vs. urban effects were also noted for motivational indices and reveal urban students as having significantly more intrinsic motivation ($p < .001$), identified regulation ($p = .001$), and higher Self-Determination Index (SDI) scores ($p < .001$) than rural students. Significant state effects reveal Alberta students are significantly more intrinsically motivated ($p < .001$) than Utah students.

Due to sheer population size of metropolitan areas, urban students inherently have more PE options and more funding, which possibly allows them to experience greater autonomy and competence. Limited choices in rural schools could be a contributing factor for lower autonomy and competence measures. Rural PE teachers oftentimes teach other core subjects, which possibly makes PE classes less engaging and rigid, thereby causing lower relatedness between teacher and student. The Covid-19 pandemic has predominately paused extracurricular physical activities in urban settings, potentially catalyzing greater meaning and importance in urban PE; possibly initiating greater self-determined motivation for urban students.

Rural PE teachers are recommended to be intentional with their relatedness support. PE teachers should adopt a holistic approach to satisfying the basic psychological needs of relatedness, competence, and autonomy instead of focusing on one need at the expense of others.

Keywords: relatedness, self-determination, motivation, rural urban differences

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DESCRIPTION OF THESIS STRUCTURE AND CONTENT

The preliminary pages of this thesis, *The Effects of Relatedness Support on Motivational Profiles in Rural vs. Urban Physical Education Students*, reflect requirements for submission to the university. The thesis report is presented as a journal article and conforms to length and style requirements for submitting research reports to physical education journals.

This thesis is written in a hybrid format. The hybrid format links together traditional thesis requirements with journal publication formats.

The complete literature review is included in Appendix A. Appendix B contains approved permission forms for students and parents. Appendix C contains the Institutional Review Board (IRB) approval form, while Appendix D contains the study's instruments.

This thesis format has two reference lists. The first reference list contains references included in the journal-ready article. The second list includes all citations, both from the journal-ready article and from the "Review of the Literature" found in Appendix A.

I, Corbin Stringam, am writing this thesis for blind review with the intention to publish, thus authors names have been omitted. I am the primary researcher mentioned throughout the thesis, while anytime I reference "researchers" or "we" it refers to myself and my thesis committee, including Keven Prusak, David Barney, and Carol Wilkinson, who will be credited as co-authors for publication purposes.

Introduction

Rural America is socially, politically, culturally, and economically critical to the USA, as demonstrated by the 2016 U.S. presidential election race (Slack & Jensen, 2020). Although the majority of U.S. towns in recent decades have seen depopulation due to aging and youth out-migration, there is an increase in ethno-racial diversity and in-migration in select rural and small-town locations which are adjacent to metropolitan areas (Slack & Jensen, 2020). Migration to small-town rural settings is perhaps due to people searching for things such as a retirement setting, small school experiences, lower crime rates, and other family considerations (Slack & Jensen, 2020). The difference in the quality of public education and municipal services that non-urban communities provide has partially been the reason for unparalleled urban flight from some of America's largest cities in the past few decades (Myers et al., 2013). Parents migrating, in order to obtain excellent public education opportunities for their children, need to consider the connections their children will make with fellow students and teachers as among the most critical qualities a school can offer. Without these connections, student motivation, participation, and enjoyment in school will most likely decrease.

No matter the direction of the migration (i.e., moving from urban to rural settings or rural to urban settings), school relationships of all kinds are inevitably altered. For example, over two thirds of friends are potentially either lost or gained during the first year of middle school (Lessard & Juvonen, 2018). Rural schools might be more conducive to help foster and solidify connections with others than urban schools. The inherent access to new peers within a larger school environment for urban middle school students leads to instability (i.e., loss or gain of friends), which instability is associated with lower academic engagement and achievement by the time students finish middle school (Lessard & Juvonen, 2018). Instability in vital student

relations can not only harm engagement and achievement, but without student perceived connections to peers and teachers, detrimental decreases in student motivation can occur.

Students innately long for feelings of love, connection, and belonging (i.e., relatedness) from their peers (Baumeister & Leary, 1995). Although school (along with other activities where individual choice is limited) is typically not interesting to some students, perceived relatedness deriving from teachers and fellow students can help create an environment where intrinsic motivation can grow (Ryan & Deci, 2000). Furthermore, it is possible that students attending rural schools experience less friendship instability and greater relatedness simply because of the cohort nature (i.e., same group of peers throughout entire education experience) of rural K-12 programs.

As perceived relatedness increases in students, engaging in activities starts to become increasingly self-determined (i.e., desired from within) and less forced upon by external factors (i.e., teachers, parents, and coaches; Deci & Ryan, 1985). Consequently, rural student relatedness is potentially more maintained than urban students' relatedness because of friendship stability (Lessard & Juvonen, 2018), and the connections classmates have with each other and their teachers are constantly growing stronger throughout the rural K-12 experience. Increased student-to-student and teacher-to-student relatedness brings about greater self-determined motivation within students in schools (Sun & Chen, 2010).

Likewise, positive teacher-to-student relatedness in urban and rural settings is a critical need for not only the student but for the teacher also. Highly perceived teacher-to-student relatedness is essential if teachers are to have consistent optimal functioning (i.e., be at their best every day), higher levels of workplace engagement, and decreased emotional exhaustion (Klassen et al., 2012). Interestingly, teacher-to-teacher relatedness is considered a desire for

teachers, but only secondary to the needfulness of teacher-to-student relatedness (Klassen et al., 2012). So, not only is the connection, relationship, and sense of belonging (i.e., relatedness) between students important, but it is also valuable between the teacher and the student as well.

Altogether, an urban school environment, which includes friendship instability, larger overall student populations, and little to no fixed K-12 cohort experiences (due to movement in and out of elementary schools, middle schools, and high schools), may make achieving sufficient perceived relatedness an overall challenge for both urban teachers and students when compared to rural school settings. Interestingly, relatedness is only one of three basic psychological needs (Deci & Ryan, 1985) that teachers and students both need to have satisfied in an educational setting in order for them to be more engaged, successful, and internally motivated.

Self-Determination Theory

One of the most well-known, articulate, impactful, and comprehensive theories on human motivation is self-determination theory (SDT; Ryan & Deci, 2017). The macro theory Deci and Ryan (1985) initially proposed involves a motivation continuum made up of many parts which begins with amotivation, progressing along a continuum of forms of extrinsic motivation (external regulation, introjected regulated, identified regulation, integrated regulation), and ends at intrinsic motivation (the most self-determined form of motivation). It is important to note in SDT, volitional (i.e., freely chosen) behavior is considered self-determined behavior.

Individual human motivation is constantly shifting, depending on which activity the individual is participating in. Motivation in one school subject might be completely external, for example, only doing well in math class because the motivation is contingent upon wanting a high grade on a report card. In contrast, motivation towards a different school subject, like PE, could be entirely intrinsic, in other words, participating in the physical activities solely because one

finds happiness and enjoyment while engaging in PE class. An individual demonstrating intrinsically motivated behavior is doing the activity for their own sake, not because of externally originating conditions, guilt, or persuasion (Deci et al., 1991). Additionally, amotivation involves a lack of interest or satisfaction in the activity. An individual might not perform the activity because they do not expect the activity to produce a desired outcome (Deci & Ryan, 1985).

Extrinsically motivated individuals engage in activities they do not find inherently interesting, but do so because of material rewards or constraints (Deci & Ryan, 1985). An outside force, like a schoolteacher, could impose rewards, punishments, and contingencies upon students to try and motivate them into performing or completing a task. Extrinsic motivation is located between amotivation and intrinsic motivation on the SDT continuum. Once believed to be the opposite of intrinsic motivation, extrinsic motivation is now believed to be multidimensional (reflective of the relative position extrinsic motivation is on the SDT continuum; Deci, 1971). More specifically, extrinsic motivation has four forms: external regulation, introjected regulation, identified regulation, and integrated regulation. External- and introjected-regulation, are less volitional or less autonomous. Whereas identified- and integrated-regulation are autonomous and therefore more self-determined. All four forms of extrinsic motivation lie upon the SDT continuum, external-regulation being the least self-determined and closest to amotivation, while integrated-regulation being the most self-determined and closest to intrinsic-motivation.

External regulation is the least autonomous because it relies completely on external control. If the controlling aspect of the behavior is removed, the behaviors become increasingly difficult to maintain (Niemic & Ryan, 2009). For example, a student who dislikes running may participate in a cross-country unit in PE only because they want to receive a nice t-shirt at the

end of the unit (Sun & Chen, 2010). Once the unit is over, the student will not likely run on their own. If behavior is regulated by introjected regulation, the individual does not accept the activity as their own but performs the activity to avoid feelings of guilt or shame. A student who participates in a PE activity to avoid guilt from peers is an example of introjected regulation.

Identified regulation is more self-determined than introjected regulation because the behavior is performed by choice, is highly valued, and judged important enough for the individual to participate (Vallerand, 1997). A different student may engage in a cross-country running unit because they have identified with the potential health benefits their PE teacher has described as a consequence of running often. Lastly, integrated-regulation is more self-determined than identified-regulation because the values associated with the activity now are aligned with the values of the self. A PE student who not only identifies with the health benefits, but integrates the value of good health, which includes running on their own outside of PE class is an illustration of integrated regulation. It is close to intrinsic motivation, but it is still considered a part of extrinsic motivation because the purpose of the behavior is still to obtain outcomes, like good health, that are independent from enjoyment of the activity alone (Sun & Chen, 2010). According to Deci and Ryan (1985), individual behavior can become more self-determined to the degree that certain basic psychological needs (i.e., competence, autonomy, and relatedness) are satisfied.

This study focuses on SDT because it is nuanced and articulate. The SDT continuum helps to locate individual motivational behavior in particular activities, whereas measuring individual satisfaction of competence, autonomy, and relatedness allows coaches and teachers (and others too numerous to include) to know where best to focus their efforts in order to help move players and students along the continuum to eventually becoming more self-determined.

For example, to the degree any one of the needs of competence, autonomy, or relatedness are not satisfied in physical education classrooms, student motivation is more externally regulated and forced, instead of internal and chosen (i.e., self-determined). This study will focus on student perceived relatedness (or lack thereof) in urban and rural PE classrooms. Environment, and the corresponding motivation types vary based on the global, contextual, or situational level.

Hierarchical Conceptualization of Motivation Process

Self-determination theory has antecedents (competence, autonomy, and relatedness), determinants, mediating factors, and decedents that all operate on three separate levels, global, contextual, and situational (Standage, Duda, & Ntoumanis, 2003). The global level is how the individual personally is motivated in their environment. For example, this level considers life traits like optimistic, adventurous, and ambitious as motivations. Contextual level motivation is how an individual operates in a context like PE, or school, while situational motivation is how an individual is motivated in a specific situation, or in real time, for example, like an athlete in their soccer game (Standage, Duda, & Ntoumanis, 2003); Vallerand, 1997). While distinguishing between the hierarchical levels of motivation is valuable, discussing ways to increase autonomous motivation within PE is of primacy in this study.

If one is to become more self-determined on any level, they must have one or more of the needs of competence, autonomy, and relatedness met. Competence refers to an individual perceiving they are competent or capable of succeeding in carrying out a function. They feel a sense of self-efficacy (i.e., “I can do this”), and want to accomplish the task. An individual feels the need of autonomy being realized when they experience volition in an activity (“I have the freedom and choice to do this”). Lastly, relatedness is being satisfied when an individual feels

accepted, included, loved, and respected by others while engaging in the social environment they are participating in.

Antecedents in Physical Education

The psychological basic needs, as discussed above, being frequently and consistently met on a situational level, such as in a PE class, should have a positive bottom-up effect on contextual motivation (i.e., contextual level self-determined motivation increases), thereby allowing the student to feel more self-determined about PE and school in general (Vallerand, 1997). But equal attention and equal value are not given to each of the three basic psychological needs. Instead, autonomy and competence coupled together are seen as the driving force behind increasing individual intrinsic motivation, as competence satisfaction alone will not sustain nor enhance intrinsic motivation (Niemic & Ryan, 2009; Ryan & Deci, 2000).

In school settings, school districts assign calendar dates to be in and out of school and specific times each class should end. The teacher makes the lesson plans, organizes the activities in the classroom/gymnasium, and gives assignments/deadlines; all of which students are expected to follow. This controlling structure of education usually only allows a student to perform an activity, at most, in a way that is identified or integrated (i.e., well-internalized extrinsic motivation; Deci & Ryan, 2000). The more the environment (i.e., teacher, school, community) promotes relatedness, autonomy, and competence, the more likely students will feel self-determined and want to do the activities on their own without coercion or external rewards (Deci & Ryan, 1985). When competence and autonomy are promoted within schools, student problem solving and social responsibility improve (Deci et al., 1991). Still, little is known about the role relatedness plays within the context of PE. There is a paucity of research which demonstrates its effects on self-determined behavior in the PE classroom (Cox et al., 2009;

Haerens et al., 2015; Shen et al., 2012; Sun & Chen, 2010). Also, Sun and Chen (2010) explained the challenges PE educators face; first, intrinsic motivation among students is extremely difficult to maintain, and second, the majority of studies which focus on needs satisfaction in schools only look at the two needs which get a student closer to intrinsic motivation on the SDT continuum (competence and autonomy) rather than any other combination of the three antecedents. This underscores the lack of research involving relatedness and its supposed lesser role in PE motivation.

Conversely, studies have shown the positive effects relatedness can have on the internalization process (identified and integrated regulation) when coupled with another basic need (see Niemiec & Ryan, 2009). Standage, Duda, and Ntoumanis (2003) provided findings which demonstrated satisfaction of both relatedness and competence was more predictive of self-determined motivation than autonomy alone. There is still a need for further research within a PE context that measures relatedness satisfaction and its effects on motivation (Cox et al., 2009; Standage, Duda, et al., 2003).

Despite increased attention on the notion of relatedness, more work is warranted. Relatedness, which is one of the three basic psychological needs of human beings (Deci & Ryan, 1985), is absolutely essential in order to help motivate individuals, especially students, in a school setting. Without ample understanding on how relatedness satisfaction incites cause (i.e., motivates) in different populations, SDT will fail to hold claim to relatedness as a basic need and schools will miss out on helpful tools to increase student motivation.

Research (Craike et al., 2011) reveals demographics can be a contributing or hindering factor for peer-to-peer relatedness, for example, students in urban settings have reported greater autonomy and competence satisfaction in team sports, which led to greater inclusion and

relatedness. Urban students in Shen et al. (2012), who experienced little relatedness with their teacher, but still felt relatedness among their peers were still able to have high levels of PE engagement. Moreover, Shen et al. (2012) found student-to-student relatedness contributed to greater engagement than did autonomy in urban schools.

In contrast, rural settings may present unique challenges to the satisfaction of relatedness in physical activity. Although not in the context of physical education, but in the larger context of physical activity, Craike et al. (2011) found “striking differences” between urban and rural Australian teens (p. 365). A major difference was the lack of competence support given to rural females who were not considered elite athletes. Elitist rural settings provided no additional/alternative options for non-elite athletic female teens, which was then followed by teasing and exclusion. Rural adolescents may not feel a part of their peer group when less competitive sports and physical activity options are unavailable to them. In other words, “the lack of competence results is associated with a lack of relatedness” (Craike et al., 2011, p. 364). Although relatedness is our primary interest, to fully understand relatedness, we cannot measure it in isolation from competence and autonomy. Measuring relatedness support alone is extremely challenging (Beddoes et al., 2016).

While choice for physical activities may be inherently limited in a rural PE setting, connection to others may not be. Students in rural education within the US and Canada tend to go to the same school with the same peer group from kindergarten through grade twelve. Although there is sometimes more exclusion in rural team sports (Craike et al., 2011), the same may not be true for rural PE classes. According to Lessard and Juvonen (2018), urban middle school students experience more instability with their peers and teachers in school overall, not just in PE. Such instability may be a disruptor of relatedness support and in turn, of self-

determined motivation. Thus, student-to-student relatedness in PE for a rural school may be different than student-to-student relatedness in an urban school. Therefore, the purpose of this study is to examine the degree to which relatedness support affects motivational profiles in rural vs. urban PE students. We hypothesize that rural environments will promote greater student-to-teacher and student-to-student relatedness, which in turn will result in a more self-determined motivational profile in physical education students in rural environments as compared to urban environments.

Methods

Participants and Setting

This is a descriptive, cross-sectional study designed to explore the effects that student-to-student rural relatedness and student-to-student urban relatedness has on students' respective motivation profiles within a PE setting. In addition to the physical setting, it is important to discuss the global context which also impacted students. The Covid-19 pandemic was ongoing throughout the planning and execution of this study. Students were just returning to normalcy of in-person PE classes while this survey was administered and data collected, in the Fall of 2021.

Participants were comprised of adolescent students ($N = 608$, 363 males, 245 females) from three rural public schools ($n = 177$), and six urban public schools ($n = 431$) located throughout a western province in Canada (Alberta) and a state located in the intermountain west of the USA (Utah). Schools were selected based on the size of the student body. The criterion for an urban school was the school had to be located within a city with a population of 100,000 or greater and had to be a middle school or high school. The school size for urban schools was 800 total students or greater for both middle schools and high schools. The criterion for a rural school was the school had to be located in a city or town with a population of 10,000 or less and had to

be a middle school, high school, or combined middle school/high school. The school size was 350 students or less for each school surveyed. By design the researcher did not sample schools or communities that were in the middle demographics. All procedures received university, and school approval before the study began. Parental permission and child assent forms were distributed and signed prior to data collection.

Procedures

Prior to data collection, the primary researcher of this study contacted teachers and principals through email and phone to secure site permission to conduct this study. Thirteen urban PE teachers and 9 rural PE teachers were trained for monitoring an anonymous online Qualtrics survey. The 15-minute survey consisted of 31 items including demographics (gender, grade level, age) 14 motivational items, and 17 basic psychological needs satisfaction items. Trained PE teachers circulated throughout their classes to help clarify questions about the survey.

Instruments

Situational Intrinsic Motivation Scale – Physical Education (SIMS-PE)

A 14-item modified version of the 16 item, 4 subscale SIMS-PE was used to measure motivation at the situational level (Guay et al., 2000). SIMS-PE measures the motivational constructs of intrinsic motivation (IM), identified regulation (IR), external regulation (ER), and amotivation (AM) and has been found valid and reliable for use in this population (Standage, Duda, et al., 2003). The question asks, “Why are you currently participating in PE?” For example, students will respond that they are participating in current PE activities (a) “because I think the activities are interesting” or (b) “because I don’t have a choice.” Other examples of items used include, “Because I think that this class is interesting” and “I do PE but I am not sure if it is worth it.” Students responded to the 14 items on a 1-7 rating Likert scale with 1 =

“Corresponds not at all,” 4 = “Corresponds moderately,” and 7 = “Corresponds exactly.” Four subscale scores were likewise calculated by forming means of respective subscale items.

Subscale means were used for all subsequent motivation analyses.

Basic Psychology Needs Scale-Revised (BPNS-R)

An abridged version of the 24 item Basic Psychological Need Scale-Revised (Haerens et al., 2015) adapted to the context of PE was used to measure perceptions of competence, autonomy, and relatedness support (Chen et al., 2015). The 12 needs satisfaction items from the BPNS-R were kept, while the 12 frustration items were removed. Traditionally there is only one relatedness subscale, but this study also focused on peer-to-peer connections and so this study also included two subscales for relatedness comparable to that used in Fedesco et al. (2019). The two subscales are first, student-to-teacher relatedness (STR), and second, student-to-student relatedness (SSR). The scale from BPNS-R was modified to read “During PE this past month...” Students responded to the 17 statements on a 1-7 rating Likert scale wherein 1= “Never” and 7 = “Always”. Questions on the BPNS-R were typical of the following: “I felt I could successfully complete difficult tasks,” while relatedness subscale questions were typical of “I felt that my class members I care about also cared about me” (see instruments in Appendix D).

Data Collection

Data were collected from all the participants over a six-week period in the Fall of 2021. Surveys were monitored and taken during PE classes then submitted online. Completed surveys were password protected and kept under the care of the primary researcher. Qualtrics assigned each student a random ID number making this survey anonymous.

Data Analysis

Demographic variables include state (Utah or Alberta), gender (male or female), and school (rural or urban). All response scores were inputted into IBM SPSS Statistics (Version 28) predictive analytics software and inspected for input error. Data from SIMS was reduced from 14 items to 4 subscale (AM, ER, IR, IM) means of respective items. A Self-Determination Index score (Pelletier et al., 1995) was calculated by weighting subscales as follows: $2 * IM + IDR - ER - 2 * AM$. The Self-Determination Index (SDI) score is a useful measure of one's overall self-determined behavior. The higher the score, the more one is influenced by autonomous motivations rather than extrinsic or lack of motivation (see Kahaiali'i, 2020; Pelletier et al., 1995).

Data from BPNS-R was reduced from 12 items to 4 subscale (autonomy, competence, student-to-teacher relatedness (STR), student-to-student relatedness (SSR) means of respective items. All subsequent statistical analyses were conducted using the subscale means. All response variables and subscale means were inspected for normality (skewness and kurtosis), and standard deviations were calculated (see Tables 1 and 2). Correlation analysis was used to examine the strength and direction of selected variables. Subscale reliabilities were calculated via Cronbach's alpha and are located along the diagonal in Table 3.

A nested MANOVA Omnibus test was used to examine significant differences among group (urban vs. rural), state, and gender for selected variables (selected motivational indices). Tests of assumptions for MANOVA were conducted and adjustments made as necessary. Follow-up comparisons were made as necessary via a series of one-way ANOVAs and Tukey's HSD.

Results

Descriptive statistics for all dependent variables were examined by demographic (rural vs. urban), by gender and by state (Alberta and Utah) and are found in Tables 1, 2, and 3. Overall mean SIMS-PE scores ($n = 608$) revealed students generally demonstrated moderately high levels of: (a) intrinsic-motivation ($M_{IM} = 5.63$), (b) identified-regulation ($M_{IR} = 5.72$); and (c) neutral levels of external-regulation ($M_{ER} = 4.01$), and (d) low levels of amotivation ($M_{AM} = 2.60$). Lastly, results indicated students demonstrated a positive SDI score ($M_{SDI} = 7.70$). Mean BPNS-R subscale scores also reveal that participants generally have a greater perception of competence ($M_{competence} = 5.55$) than autonomy in PE ($M_{autonomy} = 5.04$). Furthermore, students reported higher student-to-student relatedness ($M_{SSR} = 5.21$) than student-to-teacher relatedness ($M_{STR} = 4.56$).

Bi-variate relationships are found in Table 3 and reveal small to large correlations among measured variables. Interestingly, the relationships between internal motivational indices (IM and IR) and measures of student-to-student relatedness and teacher-to-student relatedness are high and moderate positive correlations respectively. Both correlations are significant (see Table 3). Subscale reliability was deemed acceptable for all subscales (i.e., $> .70$) with the exception of the student-to-teacher relatedness subscale whose alpha was calculated at $.28$. Subscale alphas are located along the diagonal in Table 3.

MANOVA tests revealed significant rural vs. urban (Wilk's $\lambda = .963$, $p = .011$), gender (Wilk's $\lambda = .837$, $p < .001$) and state (Wilk's $\lambda = .939$, $p < .001$) effects. Post hoc comparisons discovered significant rural vs. urban effects (see Table 1) for most response variables with the exceptions of student-to-student relatedness, ER and AM. Significant gender effects were found for all response variables excluding ER and AM (see Table 2). State post hoc comparisons

revealed significant effects for only IM. The following section will describe more fully follow up comparisons. It should be noted that 28 students selected third gender/non-binary or “prefer not to say” for gender. The researchers could not draw any conclusions on findings for these participants due to the lack of statistical power.

Basic Psychological Needs Indices

Student-to-Student Relatedness (SSR)

Significant gender effects were noted in SSR. Females ($M_{SSR} = 5.33$) having significantly more perceived SSR ($F(3,525) = 7.32, p < .001$) than males ($M_{SSR} = 5.25, \eta^2 = .04$). No significant effects were revealed in rural vs. urban or state variables for SSR.

Student-to-Teacher Relatedness (STR)

Significant rural vs. urban effects were noted in STR with urban students ($M_{STR} = 4.62$) having significantly more perceived STR ($F(1,525) = 4.60, p = .032$) than rural students ($M_{STR} = 4.42, \eta^2 = .01$). Significant gender effects in STR were also present with males ($M_{STR} = 4.63$) having significantly more perceived STR ($F(3,525) = 4.16, p = .006$) than females ($M_{STR} = 4.51, \eta^2 = .02$). No significant state effect was noted for STR. Although not of primacy to the study, autonomy and competence for construct validity were measured.

Autonomy

Significant rural vs. urban effects were noted in autonomy with urban students ($M_{autonomy} = 5.19$) having significantly more perceived autonomy ($F(1,525) = 9.32, p = .002$) than rural students ($M_{autonomy} = 4.66, \eta^2 = .02$). Significant gender effects in autonomy were also present with males ($M_{autonomy} = 5.13$) having significantly more perceived autonomy ($F(3,525) = 6.77, p < .001$) than females ($M_{autonomy} = 5.05, \eta^2 = .04$). No significant state effect was noted for autonomy.

Competence

Significant rural vs. urban effects were also noted in competence with urban ($M_{\text{competence}} = 5.60$) having significantly more perceived competence ($F(1,525) = 10.93, p = .001$) than rural students ($M_{\text{competence}} = 5.41, \text{Eta}^2 = .02$). Significant gender effects in competence were also present with males ($M_{\text{competence}} = 5.74$) having significantly more perceived competence ($F(3,525) = 11.11, p < .001$) than females ($M_{\text{competence}} = 5.48, \text{Eta}^2 = .06$). No significant state effect was noted for competence.

Motivational Indices

Intrinsic Motivation

Significant rural vs. urban effects were noted for IM with urban students ($M_{\text{IM}} = 5.80$) being significantly more intrinsically motivated ($F(1,525) = 16.82, p < .001$) than rural students ($M_{\text{IM}} = 5.29, \text{Eta}^2 = .03$).

Significant gender effects in IM were noted with males ($M_{\text{IM}} = 5.89$) having significantly more intrinsic motivation ($F(3,525) = 19.00, p < .001$) than females ($M_{\text{IM}} = 5.45, \text{Eta}^2 = .10$).

Significant state effects were noted for IM with Alberta ($M_{\text{IM}} = 5.73$) being significantly more intrinsically motivated ($F(1,618) = 12.91, p < .001$) than Utah ($M_{\text{IM}} = 5.16$).

Identified Regulation

Significant rural vs. urban effects were noted for IR with urban students ($M_{\text{IR}} = 5.83$) being significantly more internally motivated through identified regulation ($F(1,525) = 10.23, p = .001$) than rural students ($M_{\text{IR}} = 5.50, \text{Eta}^2 = .02$). Significant gender effects in IR were noted with males ($M_{\text{IR}} = 5.86$) having significantly more perceived internal regulation ($F(3,525) = 8.70, p < .001$) than females ($M_{\text{IR}} = 5.64, \text{Eta}^2 = .05$).

External Regulation

There was no significant rural vs. urban, gender, or state effects noted for external regulation.

Amotivation

There were no significant rural vs. urban, gender, or state effects noted for amotivation.

Self-Determination Index

Significant rural vs. urban effects were noted for SDI with urban students ($M_{SDI} = 8.32$) demonstrating significantly higher SDI scores ($F(1,525) = 8.30$ $p = .004$) than rural students ($M_{SDI} = 6.48$, $Eta^2 = .02$).

Significant gender effects were noted for SDI with males ($M_{SDI} = 8.20$) demonstrating significantly higher SDI scores ($F(3,525) = 6.77$ $p < .001$) than females ($M_{SDI} = 7.82$, $Eta^2 = .04$). There were no significant state effects noted for SDI score.

Discussion

The purpose of this study was to examine the degree to which relatedness support affects motivational profiles in rural vs. urban PE students. We hypothesized that rural schools would promote greater student-to-teacher and student-to-student relatedness, and students would be more self-determined in rural PE as compared to students in urban schools. This study examined the basic psychological needs (relatedness, autonomy, and competence) and situational motivation of individual students in rural and urban settings within Alberta and Utah schools.

Relatedness in Rural and Urban Settings

A primary focus of this study was to examine how urban and rural environments differed in student perceived relatedness. Contrary to the hypothesis, the results of the study indicate that urban schools had greater student-to-teacher relatedness than rural schools. In this study, six out of the nine total rural PE teachers are not only the PE teacher, but also teach some other core subject. With this conflict of interests, it is possible that PE teachers' primary focus at times isn't dedicated to the PE classroom. It is possible that when additional preparation and planning of other classes is involved, PE may become more rigid and less engaging. Perhaps urban schools have the luxury of staffing PE teachers who only teach PE. They might provide more choice (i.e., autonomy) and more engaging activities for their students, which in turn can create an environment for students to develop greater competence and better relationships with their teachers. When students feel greater perceived autonomy from their teachers, it involves less external controls, less pressure, and tension (Hodgins et al., 1996). When these anxious feelings are not present, individuals are less defensive, more empathetic, and demonstrate greater openness with those around them, which can lead to greater relatedness with teachers and peers (Hodgins et al., 1996).

Another plausible explanation for urban students having greater student-to-teacher relatedness is in direct relation to their autonomy satisfaction. Both relatedness and autonomy are dyads. As Ryan and Deci (2017) explain, "autonomy and relatedness satisfactions are not antithetical but, rather, are intricately connected with one another. Indeed, the fulfillment of each need is intertwined with the fulfillment of the other" (p. 293). The finding of urban students demonstrating significantly greater student-to-teacher relatedness than rural students (see Table 1) needs to be taken with caution since the Cronbach's alpha for this particular item revealed it to

be the only item below the .70 threshold, indicating the item may not be reliably measuring student-to-teacher relatedness.

Gender and Relatedness

Interestingly, females demonstrated greater student-to-student relatedness than males, while males had greater student-to-teacher relatedness than females. Females may focus more on seeking and making connections amongst their peers, while males want approval and belonging from their teachers. In previous literature, higher perceived student-to-teacher relatedness for urban high school girls was seen as a greater contributor to overall intrinsic motivation than student-to-student relatedness (Shen et al., 2012). However, Table 3 shows that student-to-student relatedness has a medium correlation to IM, while student-to-teacher has only a low correlation, meaning it may be a greater contribution to IM than student-to-teacher relatedness, contrary to Shen et al. (2012). Regardless, even when students develop relatedness among their peers and not their teachers, high levels of engagement can still be found within the PE classroom (Beddoes et al., 2016; Shen et al., 2012).

Other Basic Needs: Competence and Autonomy

Males recorded higher levels of competence and autonomy than females. Teacher choice in daily PE activities and skills tests may have played a role in how males perceived autonomy, competence, and relatedness differently than females. Some research has shown that students who feel autonomous willingly devote effort and time to a PE activity and feel competent when they are able to meet the challenges of the PE activity (Niemic & Ryan, 2009). Teacher choice on certain activities and skills tests formats may negatively affect females because their perceived “locus of control” is outside themselves (Johnson et al., 2011).

Additionally, urban students had more perceived autonomy and competence than rural students. Greater population sizes, which leads to more government funding, often gives urban students more structured and unstructured physical activities available to them, which allows them to experience greater autonomy and competence (Craike et al., 2011). Limited choices within physical education, sport, and physical activity in a rural setting could be a contributing factor to lower levels of autonomy and competence (see Table 1). If an individual does not feel competent, it is conceivable that they will likely be excluded, since most socializing and community involvement for youth involves sport or physical activity (Craike et al., 2011).

Motivational Indices

The greatest indicator of sustained intrinsic motivation (IM) is a high satisfaction of competence and autonomy (Niemi & Ryan, 2009). Since males recorded higher levels of both competence and autonomy than females, it is no surprise that males recorded higher levels of intrinsic motivation than females. As seen on the correlation analysis (Table 3), autonomy, competence, and relatedness each have large bivariate correlations with intrinsic motivation. If autonomy, competence, or relatedness were to increase by one point (see Table 3), then IM would increase by 67%, 71.7%, or 55.8%, respectively.

As seen in Table 2, the Eta^2 of IM is .10, revealing that 10% of variation in intrinsic motivation (IM) is explained by student gender. This may not seem like much, but when compared to all other Eta^2 , this is the largest percentage of variation explained by any demographic. Both this variation and the variation seen in IR can be explained by males experiencing greater satisfaction of the basic psychological needs of relatedness, autonomy, and competence.

Identified regulation (IR) is closer to IM on the SDT continuum than AM and ER, hence a large correlation as seen in Table 3. So as an individual experiences greater relatedness, autonomy, and competence in an activity, they move towards identified regulation then intrinsic motivation on the SDT continuum. When someone is engaging in an activity that they find interesting (IM) or important (well-internalized extrinsic motivation, i.e., IR), the activity only continues to be important or interesting as long as the individual is getting experiences of relatedness, autonomy, and competence (Deci & Ryan, 2000). Therefore, males are possibly getting more experiences that move them further along the SDT continuum than females, which would explain the male SDI scores being higher than females as well.

Additionally, both IM and IR were higher in urban students. At the beginning stages of this study, the very thing (i.e., relatedness) we were seeking to understand and examine more fully was being detrimentally affected by a global pandemic. Many areas of life have been put on hold or cancelled because of the Covid-19 pandemic. In person PE classes were cancelled throughout various waves of the pandemic, moving students from an interactive and relatedness rich environment, to a virtual and possibly socially harmful one. Due to the inherent closeness that sport and physical activity brings, many after school programs, including sports, had been cancelled or adjusted, especially in urban areas of higher populations. At times PE has been the only physical activity that urban students have been able to look forward to while at school. As the pandemic has continued, PE activities have possibly become more important and meaningful to urban students. Urban students may be engaging more fully in in-person PE because they've experienced a virtual PE which doesn't involve interactions with classmates or teachers. Perhaps the pandemic has caused urban students to move from a "psychological state of 'having to' to

one of ‘wanting to’ based on which a physically active lifestyle can be developed” (Sun & Chen, 2010, p. 365).

Lastly, Alberta recorded greater IM than Utah. The number of participants for Utah was 100 while in Alberta was 520. Seeing as urban students demonstrated higher values for all variables and make up 75% of Alberta’s participants ($N = 450$, compared to $N = 110$ for rural Albertans), it is possible that the IM statistic for this comparison could be conflated. Still, it is important to add that regardless of country or cultural differences, the basic psychological needs of human beings are universal (Chen et al., 2015).

Practical Implications

It would be beneficial for PE teachers of rural and/or female populations to have pedagogical frameworks which explicitly demonstrate more relatedness, autonomy, and competence in their practice. For example, as part of their assessment practices, teachers could start to implement alternative skill testing formats like a Programmed Practice Sheet (Johnson et al., 2011; Prusak, 2005), which is designed to: (a) give students choices of skill difficulty level (i.e., autonomy), (b) increase repetitions and refinement of skills for greater competence, and (c) encourage cooperation and connections with classmates (i.e., relatedness).

We recommend educators not myopically focus on just building and maintaining connections with students, and encouraging connections with peers, but instead take a holistic approach to satisfying the basic psychological needs of relatedness, autonomy, and competence. As seen from the results of this study, students who had greater autonomy and competence also had greater relatedness, IM, IR, and SDI scores.

Perhaps rural physical educators could be more intentional about their relatedness support. Contrary to the hypothesis, rural students had lower motivational profiles because their

perceived student-student and student-to-teacher relatedness was less than urban schools. There is a takeaway for rural teachers in the above-mentioned finding: rural teachers cannot be passive but must find ways to create meaningful student-to-teacher connections and student-to-student belonging in their classrooms.

Limitations

Although over 600 students from rural and urban schools took the survey from both Alberta and Utah, less than 100 of those students were from Utah, including 58 rural students and 30 urban students. The lack of statistical power needed to compare within Utah and between countries was a moderate limitation.

Another area that lacked statistical power was the 28 students who selected third gender/non-binary or “prefer not to say” for gender. The researcher could not draw any conclusions on findings for the present study, but future studies looking at basic needs satisfaction and situational motivation for third gender/non-binary participants would be worthwhile.

This was a cross-sectional study, and although informative, is less effective by design when compared to other study types (longitudinal or intervention studies for example). Beyond the researcher’s control was the kind of activities each PE teacher was giving to their students in the Fall of 2021. A future study offering both rural and urban schools the same unit to follow, and recommendations for teachers to help support basic psychological needs satisfaction like a programmed practice sheet (Prusak, 2005) would help future studies narrow down rural vs. urban differences.

Future research could also survey one rural school and one urban school within the same school district to eliminate any differing policies and procedures which districts tend to have.

Results and implications might be more meaningful to teachers and local leaders (i.e., principals and superintendents) within the district, since they can more easily trust, discuss, and collaborate with one another.

Conclusions

In summary, relatedness was higher in urban schools, specifically student-to-teacher relatedness. Rural teachers may be more thinly spread than urban teachers due to rural teachers taking on core subjects in addition to PE classes. At least 75% of the urban PE teachers involved in this study were only teaching PE related courses. Urban teachers' sole focus on PE may help in including more engaging and autonomous activities. Another possible explanation for higher student-to-teacher relatedness may be the dyad of autonomy and relatedness, meaning they are not inseparable, but are interconnected (Ryan & Deci, 2017). As urban schools naturally provide more PE options for students (i.e., autonomy), student relatedness to teachers should naturally occur. In this study, females were more closely connected to their peers than males. Males had greater student-to-teacher relatedness than females, which could have led to overall greater IM (Shen et al., 2012).

Males reported higher levels of competence, and autonomy than females did. Teacher choice in activities and assessment may have been a factor in female experiencing less autonomy and competence than males. The inherently limited options of PE classes available to choose from in rural schools could have played a role in rural students experiencing less autonomy and competence than urban students. If rural students are limited in choices, they are more likely to experience exclusion from community involvement and socializing if they don't find an activity they enjoy or is important to them (Craike et al., 2011).

All demographic groups' (i.e., gender, rural v. urban, and state) intrinsic motivation (IM), identified regulation (IR), and self-determination index scores (SDI) were influenced by how well their basic psychological needs were satisfied. Excluding student-to-student relatedness for females, whichever groups' student-to-student relatedness, autonomy, and competence was greater, then its IM, IR, and SDI were greater also. When students are engaging in an activity, it only continues to be important or interesting as long as the student is getting experiences of relatedness, autonomy, and competence (Deci & Ryan, 2000).

The Covid-19 pandemic may have been a factor in urban students having greater IM, IR, and SDI. More city activities were shutdown (including sports and other extracurricular activities) than in rural areas, so it is possible that PE became the only physical activity students could engage in, thereby making it more interesting (i.e., intrinsic motivation) or important (i.e., identified regulation; Deci & Ryan, 2000) than it was prior to the Covid-19 pandemic.

Regardless of what country students live in, or whether they live in a small town or a big city, it is more critical now than ever to provide them with quality physical education which is grounded in not only satisfying teacher-to-student and student-to-student relatedness, but also includes autonomy and competence as well. Only when activities continually have a holistic approach, will students become more self-determined in PE classrooms.

Rural teachers need to consider the findings of this study as a call to action to be more intentional about their relatedness support. Coming out of two years of uncertainty, students need teachers who want to connect with them and provide opportunities for them to connect with fellow classmates.

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Tables

Table 1

Means, Standard Deviations, and Eta² for all Dependent Variable Measures by Demographic

	Rural <i>N</i> = 177		Urban <i>N</i> = 431		<i>Eta</i> ²
	Mean	SD	Mean	SD	
S-S Relatedness	5.10	1.58	5.26	1.50	.01
S-T Relatedness	4.42	.82	4.62*	.80	.01
Autonomy	4.66	1.49	5.19**	1.33	.02
Competence	5.41	1.49	5.60**	1.31	.02
IM	5.29	1.67	5.80***	1.35	.03
IR	5.50	1.55	5.83**	1.27	.02
ER	4.63	1.90	3.76	1.97	-
AM	2.51	1.64	2.63	1.60	-
SDI	6.48	7.88	8.32**	6.61	.02

Note. * = $p < .05$, ** = $p < .01$, *** = $p < .001$, IM = intrinsic motivation, IR = identified regulation, ER = extrinsic regulation, AM = amotivation, SDI = self-determination index (-2*AM – ER + IR + 2*IM)

Table 2*Means, Standard Deviations, and Eta² for all Dependent Variable Measures by Gender*

	Male N = 363		Female N = 245		<i>Eta</i> ²
	Mean	SD	Mean	SD	
S-S Relatedness	5.25**	1.46	5.33	1.51	.04
S-T Relatedness	4.63*	.81	4.51	.68	.02
Autonomy	5.12***	1.34	5.05	1.37	.04
Competence	5.74***	1.24	5.48	1.31	.06
IM	5.89***	1.31	5.45	1.48	.10
IR	5.86***	1.30	5.64	1.36	.05
ER	4.13	1.98	3.76	1.96	.002
AM	2.64	1.67	2.40	1.43	.005
SDI	8.20***	6.71	7.82	7.02	.04

Note. * = $p < .05$, ** = $p < .01$, *** = $p < .001$, IM = intrinsic motivation, IR = identified regulation, ER = extrinsic regulation, AM = amotivation, SDI = self-determination index (-2*AM - ER + IR + 2*IM)

Table 3*Correlations of Measures of BPNS-R and Motivational Indices*

	A	C	SSR	STR	IM	IR	ER	AM	SDI
A	[.89]	.673**	.602**	.452**	.670**	.619**	-.088*	-.209**	.522**
C		[.92]	.600**	.331**	.717**	.656**	-.141**	-.289**	.596**
SSR			[.91]	.382**	.558**	.547**	-.086*	-.207**	.457**
STR				[.28]	.413**	.381**	.045	.130**	.173**
IM					[.91]	.818**	-.208**	-.334**	.786**
IR						[.86]	-.115**	-.316**	.707**
ER							[.85]	.508**	-.616**
AM								[.86]	0.795**
SDI									--

Note. * = $p < .05$, ** = $p < .01$, for bivariate correlations, if the coefficient is between .1 and .3 then the strength of the association is considered small. Between .3 and .5 the strength of association is medium, and between .5 and 1.0 the strength of association is large. Values for Cronbach's alphas are deemed acceptable if above .70.

APPENDIX A

Review of the Literature

Rural and Urban Experiences

Rural America is socially, politically, culturally, and economically critical to the USA (Slack & Jensen, 2020). Despite depopulation of U.S. towns from aging and youth leaving, there is an increase in ethno-racial diversity and in-migration in select rural and small-town locations. Migration to small-town rural settings is perhaps in search of such things as retirement, small school experiences, lower crime rates, and other family considerations (Slack & Jensen, 2020). No matter the direction of the migration, relationships of all kinds are inevitably altered. For example, over two thirds of friends are potentially either lost or gained during the first year of middle school (Lessard & Juvonen, 2018). The inherent access to new peers within a larger school environment for urban middle school students leads to instability (i.e., loss or gain of friends), which instability is associated with lower academic engagement and achievement by the time students finish middle school (Lessard & Juvonen, 2018).

Students innately long for feelings of love, connection, and belonging (i.e., relatedness) from their peers (Baumeister & Leary, 1995). Although school (along with other activities where individual choice is limited) is typically not interesting to some students, perceived relatedness deriving from teachers and fellow students can help create an environment where intrinsic motivation can grow (Ryan & Deci, 2000b). Furthermore, it is possible that students attending rural schools experience less friendship instability and greater relatedness simply because of the cohort nature of rural K-12 programs (little to no movement in and out of elementary schools, middle schools, and high schools).

Likewise, positive teacher-to-student relatedness in urban and rural settings is a critical need for teachers if they are to have optimal functioning, which includes maintaining levels of workplace engagement and decreasing emotional exhaustion (Klassen et al., 2012). Interestingly, teacher-to-teacher relatedness is considered a desire for teachers, but only secondary to the needfulness of teacher-to-student relatedness (Klassen et al., 2012).

Self-Determination Continuum

Self-determination theory (SDT; Deci & Ryan, 1985), has now become a widely known, practical, and major accepted hypothesis which is being applied to the fields of education, health care, organization, behavior, psychopathology, and sport and exercise (Niemiec & Ryan, 2009). It has utility for the teacher, nurse, psychologist, athlete, coach, parent, and many others. Self-determination theory focuses on guiding and moving people along on a multidimensional continuum towards intrinsic motivation. People can be situated on many different parts of the continuum at any one point in time. Human beings are dynamic, unique individuals, and so is each motivational profile. On the SDT continuum lies extrinsic motivation, intrinsic motivation and amotivation (absence of volitional behavior).

When a child plays a sport strictly because they find pleasure from doing so, then this child is intrinsically motivated. Children, students, and athletes (and anyone else) who are intrinsically motivated are individuals who engage in activities that they find interesting, and they do so freely, with a full sense of autonomy and not because of material rewards or constraints (Deci & Ryan, 1985). If an individual is demonstrating intrinsically motivated behavior for an activity, they are engaged in that activity for their own sake (Deci et al., 1991). There is no coercion, bribing, guilt, or alternate condition being enforced. The behavior in the

activity is taking place strictly because the individual finds satisfaction and enjoyment in the activity. Intrinsic motivation lies on the opposite end of amotivation on the SDT continuum.

Extrinsic motivation is regulated by external contingencies like rewards or punishments in order for an individual to perform an activity or behavior which helps them attain expected outcomes (Sun & Chen, 2010). Extrinsic motivation is located between amotivation and intrinsic motivation on the SDT continuum. In early literature, Deci (1971) postulated that extrinsic and intrinsic motivation were antithetical. It was assumed that extrinsic motivated behavior was not self-determined. Actions can either be controlled, meaning compelled by some outside force, or self-determined, meaning volitional and approved by one's sense of self (Deci et al., 1991). "When a behavior is self-determined, the regulatory process is choice, but when it is controlled, the regulatory process is compliance (or in some cases defiance)" (Deci et al., 1991, p. 327). Extrinsic motivation can indeed be self-determined, but just as the macro tenets of SDT are multidimensional, so are the micro tenets of extrinsic motivation.

There are four types of extrinsic motivation, all of which involve the individual self-regulating their behavior and accepting various activities based on needs, values and judgments (Sun & Chen, 2010). External regulation, introjected regulation, identified regulation and integrated regulation all make up the various levels of self-regulation within extrinsically motivated behavior. The four regulatory processes described below are ordered from least to most self-determined. External regulation being the least and furthest away from intrinsic motivation, and integrated regulation being the most self-regulated, and internalized form of extrinsic motivation. Integrated regulation is the closest to intrinsic motivation on the SDT continuum. One need not suppose if they are externally regulated for a particular activity, they

need to move through each of the remaining three before they reach intrinsically motivated behavior.

External regulation is both the least autonomous and self-determined form of extrinsic motivation. It lies closest to amotivation on the SDT continuum. It relies completely on external control. A person adopts this type of regulation in order to satisfy an external demand or reward contingency (Ryan & Deci, 2000b). A student may run a race in their school's track and field event just to receive a medal, even though the student doesn't enjoy running. Once the controlling aspect of the behavior is removed, the behaviors enacted become difficult to maintain (Niemiec & Ryan, 2009).

Introjected regulation takes place when the individual approves of the importance of a behavior but does not fully identify with its value or regulatory process. Feelings of potential guilt or shame are common which compel the individual to perform the activity. They do not enjoy the activity nor do they accept it as his or her own; it can be described as a feeling of "I have to" and not "I want to" (Sun & Chen, 2010). For example, an anxious student athlete is compelled to play their father's favorite sport in order to avoid internal feelings of guilt, shame or embarrassment. The aforementioned student's engagement is externally controlled, and is compliant with playing the sport, but the regulation is internally localized by a sense of pressure and guilt (Johnson et al., 2011).

Vallerand (1997) postulates that before Deci and Ryan (1985), motivation was thought to have been binary; either completely extrinsic or entirely intrinsic. The approach of researchers seeing behaviors as black and white is no longer accepted. He describes external regulation as completely extrinsic, while emphasizing introjected regulation as not being self-determined, because, although the regulation is internal, the internal feelings stem from anxiety and pressure.

Vallerand (1997) continues by expressing some forms of extrinsic motivation can be almost as self-determined as intrinsic motivation. Both identified and integrated regulation are more autonomous than the former two regulations.

Identified regulation “[is the] third type of extrinsic motivation, that behavior is emitted out of choice. When behavior is identified, it is highly valued and judged as important for the individual” (Vallerand, 1997, p. 281). For instance, a student may participate in ice skating classes with their peers not because they enjoy the activity itself, but because the student identifies with the health benefits ice skating can provide. It is only moving from introjected regulation to identified regulation that motivation, although extrinsic, becomes self-determined. The strong autonomy demonstrated becomes a unique feature of this regulation because it is without force of external controls (Sun & Chen, 2010). Achieving self-determined behavior is contingent upon the individual using their volition willfully to engage in the activity.

Integrated regulation is the last self-determined extrinsic motivation mechanism and is situated closest to intrinsic motivation on the continuum. Vallerand (1997) states:

An integrated regulation also involves emitting an activity choicefully. However, such choice is not solely restricted at the activity level, but is now a harmonious part of the organization of the self, That is, one’s choices are now made as a function of their coherences with other aspects of the self. (pp. 281-282)

Individuals not only do what is asked of them, but also behave according to external values because they have now accepted those values as their own. A student who demonstrates integrated regulation in ice skating, has now integrated the values the teacher has explained to them about skating. They are engaged in their physical education class and start to skate during public skating hours. Individual behaviors are not determined by affective factors (guilt, shame,

pressure), external conditions or valued others' authority when an individual is motivated via integrated regulation (Sun & Chen, 2010). Integrated regulation is extremely close to intrinsic motivation but classified as extrinsic still "because the purpose of the demonstrated (or regulated) behavior is to attain separable outcomes independent from the activity (such as good health, rather than interest in or enjoyment of [the activity])" (Sun & Chen, 2010, p. 376).

Amotivation occurs when an individual feels incompetent or helpless to do an activity, does not find value in the activity or does not expect the activity to produce a desired outcome, or feels a lack of autonomy in an environment (Deci & Ryan, 1985; Ryan & Deci, 2000b).

Amotivation can also include the individual either going through the motion without an intent to achieve or they will not take part in the activity at all (Ryan & Deci, 2000b). Amotivation has also been described as "nihilism towards [an activity]" (Vallerand et al., 1992, p. 1008). The different states of motivation, going from amotivation, to extrinsic motivation, to intrinsic motivation reflect differing degrees to which the value of a required behavior or action for an activity has been integrated and internalized by the person (Sun & Chen, 2010).

In summary, the self-determination continuum reveals there is a hierarchy of levels of self-determined motivation. The mechanisms which have very little volition and self-determination are amotivation, external regulation, and introjected regulation. Following these regulations, you cross a point in extrinsic motivation when behavior becomes self-determined. Identified regulation is self-determined behavior, but integrated regulation is higher. Intrinsic motivation is the highest level of self-determination while amotivation is the furthest away from intrinsic motivation on the SDT continuum. The motivation profile of an individual on the SDT continuum is not static, but quite dynamic. Not only can someone be amotivated for one activity while simultaneously being intrinsically motivated for another, but they can also move along the

continuum and develop greater self-determination in real time, reminding us that “all forms of motivation regardless of sources are mental processes resulting from the individual’s self-regulation” (Sun & Chen, 2010, p. 374). The individual can decrease or increase their self-determination by how well their basic psychological needs are satisfied.

Relatedness, Autonomy, and Competence

Self-determination theory posits an increase in the satisfaction of the basic psychological needs of autonomy, competence and relatedness will increase self-determination (Deci & Ryan, 1985). According to Deci and Ryan, as the individual experiences greater relatedness, autonomy, and competence in an activity, they move towards autonomous motivation on the SDT continuum. The individual explicitly pursues the activity out of importance or interest, not necessarily because they seek to satisfy their basic needs (Deci & Ryan, 2000). But, for any activity or behavior to become important or enjoyable, competence, autonomy, and relatedness must be realized (Deci & Ryan, 2000).

The antecedents of SDT are universal for all human beings, regardless of individual or cultural differences (Chen et al., 2015). When the needs of relatedness, autonomy, and competence are fostered, motivational behavior will gradually shift from an external perceived locus of causality (i.e., originates out of one’s locus of control) to an internal perceived locus of causality (i.e., control lies within the self; deCharms, 1968). The three basic psychological needs each “plays a necessary part in optimal development so that none [of competence, autonomy and relatedness] can be thwarted or neglected without significant negative consequences” (Deci & Ryan, 2000, p. 229).

Relatedness refers to an “individuals’ views about themselves as connected to others and worthy of love and respect from others” (Shen et al., 2012, p. 231). It involves feeling that one

belongs to the social milieu they are a part of (Vallerand, 1997). Researchers are suggesting relatedness be discussed as multidimensional (e.g., teacher-to-student, student-to-student), since SDT literature has shown various sources of relatedness having differential effects on motivation (Cox et al., 2009; see Fedesco et al., 2019).

Baumeister and Leary (1995) described the satisfaction of the fundamental desire for interpersonal attachments (i.e., relatedness) involves two criteria: “first, there is a need for frequent, affectively pleasant interactions with a few other people, and, second, these interactions must take place in the context of a temporally stable and enduring framework of affective concern for each other’s welfare” (p. 497). Hodgins et al. (1996) proposed the greater self-determination an individual has, the more likely the increased autonomy will lead them to more positive relatedness with their peers.

Human beings long for love and connection even from the moments after birth (Bowlby, 1958; Harlow, 1958). Deci and Ryan’s (1985) self-determination theory, along with Vygotsky’s (1978) social constructivist theory, suggest relatedness is a premise for effective learning but also a need to be satisfied in the learning process (Sun & Chen, 2010). Socially constructive environments (i.e., schools, sports teams, professional settings) improve and encourage social interaction, which promotes a sense of belongingness and stabilizes the relatedness in the setting (Sun & Chen, 2010). Vygotsky’s (1978) social constructivist learning theory helps us to recognize that social interaction is critical to empower and support individuals. Relatedness between peers then becomes essential if students, coworkers, athletes etc., are to master the knowledge they need to succeed in their environment. Interestingly, Guisinger and Blatt (1994) make clear that “an increasingly differentiated, integrated and mature sense of self is contingent on establishing satisfying interpersonal relationships” (p. 108). Relatedness is essential for

adolescent development and self-identity. In mid (14-17 years old) to late (18-24 years old) adolescence, if a sense of autonomy (i.e., individuality and choice) is not coupled with relatedness, the individual will not properly develop higher forms of relatedness, which include intimacy and generativity (i.e., concern for others, altruism, mentoring; Guisinger & Blatt, 1994). Thus, the need for providing adolescent individuals with environments that promote and do not impede relatedness is of the utmost importance. Adolescents will become more intrinsically motivated, or at the very least autonomously regulated on the extrinsic level, in their behaviors and activities when the basic psychological need of relatedness is being satisfied. Although relatedness is the focal point of this study, autonomy and competence still play a critical role in influencing motivational profiles.

Autonomy is defined as “a behavior that is volitional and reflectively self-endorsed” (Niemic & Ryan, 2009, p. 135). To have the need for autonomy satisfied entails the individual experiences choice and feels that they are the initiator of their own actions (Reinboth & Duda, 2006). deCharms (1968) noted that if your actions are aligned with your values, as opposed to your actions being controlled by external forces or internal pressures, then autonomy satisfaction is taking place. Although all three needs are crucial for self-determined behavior, autonomy is the most emphasized when speaking of sustaining intrinsic motivation. Intrinsic motivation is only maintained when autonomy and competence are both satisfied (Niemic & Ryan, 2009). In a literature review, Ryan and Deci (2000a) found several studies support the notion that even when an individual is experiencing high levels of competence, if it is not supported by a sense of perceived autonomy satisfaction, intrinsic motivation will not be maintained, enhanced, or experienced on a high level. According to Ryan and Deci (2017) autonomy and relatedness were once considered opposites. When providing needs support, autonomy and relatedness should be

linked together along with competence. As expressed in the discussion section of this study, one antecedent should never be neglected at the expense of another.

Lastly, competence means “being effective in ongoing activities that one engages in” (Sun & Chen, 2010, p. 366). The more competent an individual perceives they are in a particular activity, the more intrinsically motivated they will become at that activity (Deci & Ryan, 1985). Individuals who perceive competence “have a desire to interact effectively with the environment in order to experience a sense of [self-efficacy] in producing desired outcomes and preventing undesired events” (Vallerand, 1997, p. 300).

The Hierarchical Model of Self-Determination Theory

Vallerand (1997) has a proposed hierarchical model for self-determination theory which “contends that motivation and its determinants, mediators, and consequences, operate at three levels: global (or personality), contextual (or life domain), and situational (or state) levels” (as cited in Standage, Duda, et al., 2003, p. 20). The global motivation level signifies how an individual interacts with their environment. The contextual motivation level pertains to a relatively stable motivational disposition, that one adopts toward a specific context, such as work, sport, or education (Standage, Duda, et al., 2003; Vallerand, 1997). Lastly, situational motivation refers to the “here and now” and the motivation one feels while participating in a particular activity in the given moment (Standage, Duda, et al., 2003, p. 20). At all levels of generality in SDT, individuals need to feel their basic psychological needs of competence, autonomy and relatedness are being met with their social environments (Standage, Duda, et al., 2003). The level of self-determined motivation an individual adopts at each level (i.e., global, contextual, situational) is contingent upon the needs of relatedness, autonomy and competence being satisfied by social factors (see Vallerand, 1997).

Self-Determination Theory in Education

Self-determination focuses on human motivation, emotion, and development which takes in factors that help or hinder the growth-oriented and assimilative processes in people (Niemiec & Ryan, 2009). The utility of motivation is extremely important in education, “in which students’ natural tendencies to learn represents perhaps the greatest resource educators can tap” (Niemiec & Ryan, 2009, p. 134). Education is on the contextual level of the hierarchal model of intrinsic and extrinsic motivation (Vallerand, 1997).

Teachers often have good intentions for their classroom, but when teachers regularly impose external controls at any grade level and in any subject, intrinsic motivation within students for that activity comes to a halt. Deci et al. (1991), helps us understand that the tenets of SDT and the format of education are not antithetical, but rather when competence (“I can do this”) is promoted in students as well as a sense of autonomy (“I want and choose to do this”), then this leads students to obtain problem solving skills, stronger personal worth, and greater social responsibility. SDT proposes that intrinsic motivation is upheld by satisfaction of the basic psychological needs for autonomy and competence (Niemiec & Ryan, 2009). Conversely, in a more recent study, Fedesco et al. (2019) suggests more time should be dedicated to helping teacher-to-student relatedness, instead of the common focus efforts of improving student perceived autonomy and competence.

Sun and Chen (2010) found that intrinsic motivation is difficult to uphold among students in a school setting. Also, teacher conditioning can have a positive or negative external regulation impact on student intrinsic motivation. They concluded that “intrinsic motivation in the institutionalized learning environment can only be developed with educators’ deliberate

conditioning... [including] from teachers, peer students, or parents, stickers for participation in an activity, award certifications for a successful performance, and more” (p. 373).

The contextual setting of the school is inherently controlling to some degree, but there are still possibilities for students to have more self-determined extrinsic motivation (i.e., identified and integrated regulation). To have more autonomous motivation for students, which is closer to intrinsic motivation on the SDT continuum, Niemiec and Ryan (2009) reveal “... when students’ basic psychological needs for autonomy, competence, and relatedness are supported in the classroom, they are more likely to internalize their motivation to learn and to be more autonomously engaged in their [classes]” (p. 139).

Self-Determination Theory in Physical Education

For physical education (PE), “the classroom” for the teacher is located wherever their students are participating and engaging in physical activity. The pitch, gymnasium, ice arena, football field or track are all part of the PE domain. Although these settings do not confine a student to a desk in a typical classroom, they are still influenced by “the controlling nature of institutionalized education” (Sun & Chen, 2010, p. 374). For motivation to be the most self-determined, PE teachers are charged to create an environment which nurtures and satisfies the needs for autonomy, competence, and relatedness. Satisfaction of the basic psychological needs are also important for teacher motivation. Pressure climates from the school system placed on PE teachers in the UK played a determining role in teachers’ self-determined motivation (Taylor et al., 2008). The UK teachers then in turn displayed less autonomous, and more maladaptive (controlling) teaching strategies in their PE classrooms. Examples of more adaptive (less controlling) motivational strategies to use in the PE setting include: providing a meaningful

rationale to students, offering help and support with skills, and gaining an understanding and connecting (relatedness) with students (Taylor et al., 2008).

Does satisfaction of each of the three basic psychological needs play an equally important role in predicting self-determined motivation in PE? Within Vallerand's (1997) contextual motivational setting, Standage, Duda, and Ntoumanis (2003) found that students with higher perceived levels of competence and relatedness were more predictive of self-determined motivation than autonomy. This is contrary to dozens of experimental study findings which state that competence and autonomy are the necessary conditions to maintain intrinsic motivation (Deci et al., 1999; Niemiec & Ryan, 2009). This is convincing, although it is noteworthy to mention the contextual settings of these findings did not take place in the PE classroom (see Deci et al., 1999).

The effects relatedness has on student self-determined behavior in PE is scarce as described by (Standage, Duda, & Ntoumanis, 2003):

Less is known about the role of relatedness in the PE domain. To this end, although peers clearly have the potential to impact other students' motivation in PE, a paucity of work has examined their potential positive and negative influence on motivation. Indeed, in addition to a positive association with self-determined motivation, we found, as

hypothesized, an association between relatedness and introjected regulation. (p. 106)

In relation to the above quotation, Cox et al. (2009) lamented "although social supports for feelings of competence and autonomy have received ample research attention, relatively little research has focused on understanding key antecedents of relatedness perceptions in physical education" (p. 766).

In a more recent study, urban high school girls' sense of relatedness played a crucial role in their motivation in PE (Shen et al., 2012). Their sense of relatedness "made a unique contribution to their engagement over and above the effects of perceived autonomy" (p. 241). Students who felt little to no relatedness with their teacher, were still able to have higher engagement in PE if they perceived relatedness with their peers. Thus, students with low feelings of recognition and realization from their PE teachers, need more support from their peers in regards to their effort, attention and persistence in PE (Shen et al., 2012). Special attention needs to be given to students of lower socioeconomic status and immigrant children because both groups experience more social isolation than their peers, which contributes to lower levels of relatedness (Alivernini et al., 2019).

Lastly, demographics for motivation within PE plays a mediating role as well. Students in an urban school setting experience motivation in PE differently than students in a rural setting. Craike et al. (2011) found the influence of relatedness, autonomy, and competence on participation in physical activity (not to be confused with PE) to be varied between urban and rural settings. The basic psychological needs of competence and autonomy have reciprocal effects on one another. For rural Australian adolescent girls there was a lack of competence in a physical activity which resulted in exclusion, marginalization, and consequently, lower relatedness (Craike et al., 2011). Urban girls experienced greater autonomy and competence through the availability of structured and unstructured physical activities, which in turn allowed them to feel more belonging and relatedness. Choices within physical education, sport and physical activity is limited in a rural setting. If an individual does not feel competent, they will most likely be excluded, since most socializing and community involvement for youth involves sport or physical activity (Craike et al., 2011). Amongst girls living in a rural community setting,

Casey et al. (2009) suggests less competitive and self-referencing activities, and single-sex classes where possible to promote competence. Students were positively influenced when they experienced relatedness from their teachers, peers, and families. Satisfaction of the basic psychological needs of relatedness, autonomy, and competence are different for each individual and can be influenced by many factors, including demographics and gender.

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APPENDIX B

Permission Forms

Consent: Urban vs. Rural Relatedness in PE

Title of the Research Study:

Relatedness Satisfaction in Urban vs. Rural Physical Education Classes

Principal Investigator: Dr. Keven Prusak

IRB ID#: 2021-104

Introduction

This research study is being conducted by Corbin Stringam at Brigham Young University to determine how student connection to peers and teachers in rural and urban PE classes affect motivation. You were invited to participate because you are currently in [PE teacher's name] class.

Procedures

If you agree to participate in this research study, the following will occur:

You will be asked to fill out a 31 question survey on the computer. If you decide to take the survey, In fall 2021 you will spend about 15 minutes of PE class completing an 31 question online survey. Students taking the survey will select options 1-7 wherein “Never” = 1 and “Always” = 7. An example of some of the questions are, “During PE this past month I felt that my class members I care about also cared about me”, “During PE this past month I felt I could successfully complete difficult tasks”, and “I am currently participating in PE because I think the activities are interesting”.

Risks/Discomforts

You will miss 15 minutes of PE class time. There are no consequences for not participating.

Students who choose not to participate in the study will be given an alternate learning activity from their teacher. Students will not miss anything significant and will not be docked points for choosing not to participate in the survey.

Benefits

There are no direct benefits to you for taking the survey. It is hoped that through your participation researchers may learn more about motivation in PE classrooms.

Confidentiality

The research data will be kept in a secure location/on password protected computer and only the Principal Investigator (Keven) and Co-Principal Investigator (Corbin) will have access to the data. At the conclusion of the study, all identifying information will be removed and the data will be kept in the University Box with restricted access.

Compensation

There is no payment for participating in this study.

Participation

Participation in this research study is voluntary. You have the right to withdraw at any time or refuse to participate entirely without jeopardy to your class status, grade, or standing with your school.

Questions about the Research

If you have questions, concerns, or complaints, you can contact the Principal Investigator [Keven Prusak, 1-801-836-4998, keven_prusak@byu.edu].

Questions about Your Rights as Research Participants

If you have questions regarding your rights as a research participant contact Human Research Protections Manager by phone at (801) 422-1461; or by email: irb@byu.edu.

Statement of Consent

I have read, understood, and received a copy of the above consent and desire of my own free will to participate in this study.

Name (Printed) : _____ Signature: _____ Date: _____

Parental Permission for a Minor

Title of the Research Study: Relatedness Satisfaction in Urban vs. Rural Physical Education Classes

Principal Investigator: Dr. Keven Prusak

IRB ID#: IRB2021-104

Introduction

My name is Corbin Stringam I am a graduate student from Brigham Young University. I am conducting a research study about how student connection to peers and teachers in rural and urban physical education (PE) classes affect motivation. I am inviting your child to take part in the research because (he/she) is currently in [PE teacher's name] class.

Procedures

If you agree to let your child participate in this research study, the following will occur:

- You child will be asked to fill out a 31 question survey on the computer during PE class.
- total time commitment will be 15 minutes

There are no consequences for not participating. Students who choose not to participate in the study will be given an alternate learning activity from their teacher. Students will not miss anything significant and will not be docked points for choosing not to participate in the survey.

Risks

Your child will miss 15 minutes of PE class time in order to complete the survey. The questions will be focused on student connections to peers and teachers. The loss of privacy will be mitigated by spacing the subjects to complete the survey so no one can see their answers. The teacher will not be close to the computers so the subjects' answers are kept safe. Your child may answer only those questions that your child wants to, or you child may stop the entire process at any time without affecting his/her standing in school or grades in PE class.

Confidentiality

The researchers are not obtaining names in the survey and will not be using identifiers in the written report. Your child's responses will be kept in a secure location/on password protected computer and only the Principal Investigator (Keven) and Co-Principal Investigator (Corbin) will have access to the data. At the conclusion of the study the data will be kept in the University Box with restricted access. Data from this study may be shared with the research community, with journals in which study results are published, and with databases and data repositories used for research. The results of this study could be shared in articles and presentations.

Compensation

There will be no payment for your child participating in this study.

Alternatives to Taking Part in the Study

If you do not want your child to participate in this study, your child will have the option to do a PE related activity of their choice at the discretion of their PE teacher during the 15 minutes that their classmates will be taking the survey. Once again, they will not miss anything significant and will not be docked marks if your child does not take the survey.

Questions about the Research

Please direct any further questions about the study to the Principal Investigator, Dr. Keven Prusak: keven_prusak@byu.edu or to his grad student, Corbin Stringam: 385-254-2377 , mrcorbz5@gmail.com.

Questions about your child's rights as a study participant or to submit comment or complaints about the study should be directed to the Human Research Protection Manager, Brigham Young University, at (801) 422-1461 or send emails to irb@byu.edu.

You have been given a copy of this consent form to keep.

Participation

Participation in this research study is voluntary. You are free to decline to have your child participate in this research study. You may withdraw your child's participation at any point without affecting your child's grade/standing in school.

Child's Name: _____

Parent Name: _____ Signature: _____ Date: _____

Youth Assent

What is this study about?

My name is Corbin Stringam, I am from Brigham Young University. I would like to invite you to take part in a research study. Your parent(s)/guardian know we are talking with you about the study. This form will tell you about the study to help you decide whether or not you want to be in it.

In this study, we want to learn about how urban and rural students in Physical Education are motivated differently, based on how close their connections are with their peers and teachers. Participation in this study is completely voluntary. There will be no consequences for not participating, and you may withdraw from the study at any time without consequence.

What am I being asked to do?

If you decide to take the survey, In fall 2021 you will spend about 15 minutes of PE class completing an 31 question online survey. Students taking the survey will select options 1-7 wherein “Never” = 1 and “Always” = 7. An example of some of the questions are, “During PE this past month I felt that my class members I care about also cared about me”, “During PE this past month I felt I could successfully complete difficult tasks”, and “I am currently participating in PE because I think the activities are interesting”.

How will being in this study affect me?

You will miss 15 minutes of PE class time. There are no expected benefits to taking the survey, but it will possibly help teachers and researchers know how urban and rural students are motivated in PE. There are no consequences for not participating. Students who choose not to participate in the study will be given an alternate learning activity from their teacher. Students

will not miss anything significant and will not be docked points for choosing not to participate in the survey.

Who will see the information collected about me?

We won't tell anybody that you are in this study and everything you tell us will be kept private. Your parents/guardians will know that you took part in the study, but we won't tell them anything you said or did, either (surveys will be anonymous). When we tell other educators or write research papers about what we learned in the study, names will not be included. The information collected about you during this study will be kept safely locked up. Since the surveys are anonymous, nobody, including the researchers, will be able to identify names with individual answers. The study information about you will not be given to anyone.

What do I get for being in the study?

No compensation will be provided.

What if I have questions?

You can take more time to think about being in the study and also talk some more with your parents about being in the study. Email Dr. Keven Prusak if you have further questions:

keven_prusak@byu.edu

If you want to be in this study, please sign and print your name.

Name (Printed): _____ Signature: _____ Date: _____

APPENDIX C

Institutional Review Board Approval Form

**Memorandum**

To: Keven Prusak, Ph.D.
 Department: BYU - EDUC - Teacher Education
 From: Sandee Aina, MPA, HRPP Associate Director
 Wayne Larsen, MAcc, IRB Administrator
 Bob Ridge, PhD, IRB Chair
 Date: May 07, 2021
 IRB#: IRB2021-104
 Title: Relatedness Satisfaction in Urban vs. Rural Physical Education Classes

Brigham Young University's IRB has approved the research study referenced in the subject heading as expedited level, Category 7. This study is contingent upon the approval of the school districts' institutional officials. This study does not require an annual continuing review. Each year near the anniversary of the approval date, you will receive an email reminding you of your obligations as a researcher. The email will also request the status of the study. You will receive this email each year until you close the study.

The IRB may re-evaluate its continuing review decision for this decision depending on the type of change(s) proposed in an amendment (e.g., protocol change that increases subject risk), or as an outcome of the IRB's review of adverse events or problems.

The study is approved as of 05/07/2021. Please reference your assigned IRB identification number in any correspondence with the IRB.

Continued approval is conditional upon your compliance with the following requirements:

1. All research personnel will follow the Canadian federal and provincial statutes which govern the protection of personal data.
2. A copy of the approved informed consent statement and associated recruiting documents (if applicable) can be accessed in IRIS. No other consent statement should be used. Each research subject must be provided with a copy or a way to access the consent statement.
3. Any modifications to the approved protocol must be submitted, reviewed, and approved by the IRB before modifications are incorporated in the study.
4. All recruiting tools must be submitted and approved by the IRB prior to use.
5. In addition, serious adverse events must be reported to the IRB immediately, with a written report by the PI within 24 hours of the PI's becoming aware of the event. Serious adverse events are (1) death of a research participant, or (2) serious injury to a research participant.
6. All other non-serious unanticipated problems should be reported to the IRB within 2 weeks of the first awareness of the problem by the PI. Prompt reporting is important, as unanticipated problems often require some modification of study procedures, protocols, and/or informed consent processes. Such modifications require the review and approval of the IRB.

Instructions to access approved documents, submit modifications, report complaints and adverse events can be found on the IRB website under IRIS guidance: https://orca.byu.edu/IRB/Articulate/Study_Management/story.html.

APPENDIX D

Instruments

Abridged Basic Psychological Need Scale-Revised adapted to the context of PE (BPNS-R; Chen et al., 2015; Haerens et al., 2015)

Using the scale below, please circle the number that best describes the reason why you are currently engaged in this activity. Answer each item according to the following scale: 1 = correspond not at all; 2 = correspond a very little; 3 = correspond a little; 4 = correspond moderately; 5 = correspond enough; 6 = correspond a lot; 7 = correspond exactly.

Abridged BPNS-R items

During PE this past month...

Autonomy items

- | | |
|---|---------------|
| 1. I felt a sense of choice and freedom in the things I undertake. | 7 6 5 4 3 2 1 |
| 2. I felt that the exercises reflect what I really want. | 7 6 5 4 3 2 1 |
| 3. I felt like the way the lesson was taught reflect what I want myself. | 7 6 5 4 3 2 1 |
| 4. I felt like what we have been doing during the lesson really interests me. | 7 6 5 4 3 2 1 |

Competence items

- | | |
|--|---------------|
| 5. I felt confident that I could do exercises well. | 7 6 5 4 3 2 1 |
| 6. I felt capable at what I did | 7 6 5 4 3 2 1 |
| 7. I felt competent to achieve my goals | 7 6 5 4 3 2 1 |
| 8. I felt I could successfully complete difficult tasks. | 7 6 5 4 3 2 1 |

Relatedness: student-to-student items

- | | |
|--|---------------|
| 9. I felt that the class members I care about also cared about me. | 7 6 5 4 3 2 1 |
| 10. I felt connected with the class members who care for me,
and for whom I care. | 7 6 5 4 3 2 1 |
| 11. I felt close and connected to the class members who are important to me. | 7 6 5 4 3 2 1 |
| 12. I experienced a warm feeling with the class members I spend time with. | 7 6 5 4 3 2 1 |

Relatedness: student-to-teacher (Adapted from Fedesco et al., 2019).

- | | |
|---|---------------|
| 13. I really liked the teacher. | 7 6 5 4 3 2 1 |
| 14. I got along with the teacher. | 7 6 5 4 3 2 1 |
| 15. The teacher cared about me. | 7 6 5 4 3 2 1 |
| 16. I was not close to the teacher. | 7 6 5 4 3 2 1 |
| 17. The teacher did not seem to like me much. | 7 6 5 4 3 2 1 |
-

14-Item Version of the SIMS* (Standage, Duda, et al., 2003; Guay et al., 2000)

Directions: Read each item carefully. Using the scale below, please circle the number

Directions: Read each item carefully. Using the scale below, please circle the number that best describes the reason why you are currently engaged in this activity. Answer each item according to the following scale: 1 = correspond not at all; 2 = correspond a very little; 3 = correspond a little; 4 = correspond moderately; 5 = correspond enough; 6 = correspond a lot; 7 = correspond exactly.

Why are you currently participating in PE?

- | | |
|---|---------------|
| 18. Because I think that this activity is interesting. | 7 6 5 4 3 2 1 |
| 19. Because I am doing it for my own good. | 7 6 5 4 3 2 1 |
| 20. Because I am supposed to do it. | 7 6 5 4 3 2 1 |
| 21. There may be good reasons to do this activity,
but personally I don't see any. | 7 6 5 4 3 2 1 |
| 22. Because I think that this activity is pleasant. | 7 6 5 4 3 2 1 |
| 23. Because I think this activity is good for me. | 7 6 5 4 3 2 1 |
| 24. Because it is something that I have to do. | 7 6 5 4 3 2 1 |
| 25. I do this activity but I am not sure if it is worth it. | 7 6 5 4 3 2 1 |
| 26. Because this activity is fun. | 7 6 5 4 3 2 1 |
| 27. I don't know; I don't see what the activity brings me. | 7 6 5 4 3 2 1 |
| 28. Because I feel good when doing this activity. | 7 6 5 4 3 2 1 |
| 29. Because I believe this activity is important for me. | 7 6 5 4 3 2 1 |
| 30. Because I feel that I have to do it. | 7 6 5 4 3 2 1 |
| 31. I do this activity, but I am not sure it is a good thing
to pursue it. | 7 6 5 4 3 2 1 |

Note. Intrinsic Motivation items: 18, 22, 26, 28; Identified Regulation items: 19, 23, 29; External Regulation items: 20, 24, 30; Amotivation items: 21, 25, 27, 31

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- Fedesco, H. N., Bonem, E. M., Wang, C., & Henares, R. (2019). Connections in the classroom: Separating the effects of instructor and peer relatedness in the basic needs satisfaction scale. *Motivation and Emotion, 43*(5), 758-770.
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