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Abstract
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Keywords
motivated, effort, engagement, care, motivation, students, enhancing, teacher, project

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The Teacher Care Project: Enhancing motivation, engagement and effort of a-motivated students

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Keywords Low motivation, self-determination theory, relatedness

Introduction

Engagement, effort and motivation are important areas of focus within physical education (Silverman & Ennis, 2003). A major reason why the aforementioned constructs are deemed important can be attributed to their association with an overarching goal of physical education in the adoption of a physically active lifestyle (Standage, Duda, Ntoumanis, 2003; Taylor, Ntoumanis, Standage & Spray, 2010). While being physically active for a lifetime is an important aspect for students, there is a critical group of physical education student that is in need of assistance in meeting the learning elements of physical education called the a-motivated student (Perlman, 2010). As such, a recent growing area of inquiry has been around the concept of a-motivation and strategies that may assist in changing these student's behaviors in physical education. Therefore, the aim of this study was to examine the influence of a theoretically based motivation intervention on developing the motivation, engagement and effort of students with low motivation.

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Theoretical framework – A motivation and social context

The theoretical framework for understanding a motivation and the development of an instructional focused intervention were grounded in Self-Determination Theory (SDT; Deci& Ryan, 1985; 2002). SDT posits a strong association between student motivation and the intended experiences and outcomes (Deci & Ryan, 1985). Furthermore, the social context or educational setting that a student is engaged in will support at various degrees three key psychological needs that in turn facilitate a student's overall level of motivation (Reeve, 2009). Table 1 provides an illustration of the association and relationship between the social context, motivational responses and individual outcomes espoused by SDT (Deci & Ryan, 2002). Of importance to this study are concepts associated with a-motivation (i.e. population of student used) and the social context (i.e. focus of the intervention).

Table 1. Context, motivational responses and outcomes espoused by SDT

Social Context	Psychological Needs	Student Motivation	Outcomes or Experiences
Level of Support	Autonomy Competence	Intrinsic Extrinsic	Engagement Effort
	Relatedness	A-motivation	Physical Activity Enjoyment

Adapted from Deci and Ryan (2002)

Deci and Ryan (1985) defined the concept of a-motivation as an individual that possess an extremely low level of motivation and/or desire to engage or sustain in a specific activity. Students deemed a-motivated in physical education are more likely to not attend class and be exposed to a decreased number of opportunities to learn when compared with their more motivated classmates (Ntoumanis, Pensgaard, Martin & Pipe, 2004). Furthermore, a-motivated students express low levels of pleasure, a genuine dislike/hatred for PE (Perlman, 2012a) and engage in a significantly lower level of in-class physical activity (Perlman, 2012b). Factors that influence a student toward being a-motivated are that they feel they (a) do not have the abilities to complete a task, (b) putting forth effort will not illicit a desired outcome, (c) the activities are not appealing and (d) there is a lack of understanding of the material being taught in PE (Legault, Green-Demers & Pelletier, 2006). With the evidence provided above, a-motivated students can be viewed as a population in dire need of assistance to positively influence their behavior to facilitate their learning in physical education. An area of inquiry that may provide assistance for a-motivation is the type of social context that students are engage in (Perlman, 2014).

Much of the SDT grounded literature on the social context has been aligned with provided students with settings that are highly autonomy-supportive that in turn support the needs of autonomy (providing control and choice), competence (allowing for students to be successful) and relatedness (feeling a sense of connection within the class) (Van den BergheVansteenkiste, Cardon, Kirk & Haerens, 2014). Research has identified that

students engaged in an autonomy-supportive setting reported higher levels of motivation (Perlman, 2013b), engagement (Reeve, Jang, Carrell, Jeon&Barch, 2004) and in-class physical activity (Perlman, 2013a). While much of this research has been focused on students in general, a recent avenue for inquiry has begun to examine the role of the social setting/context on a-motivated students. Some promise has been demonstrated in terms of strategies relating to social settings/context that positively influence the behaviors of a-motivated students. Perlman (2010; 2011; 2012a; 2012b) examined a-motivated students engaged in a variety of units taught using Sport Education (SE; Siedentop, 1994). Findings from these collective works revealed that engagement in SE influenced higher levels of in-class physical activity, motivation, enjoyment and a connection with their peers and teachers. Furthermore, Walllhead, Garn, Vidoni and Youngberg (2013) found similar results with SE whereby a-motivated students demonstrated higher rates of in-class participation. While SE has been aligned with supporting all three psychological needs (Perlman & Goc Karp, 2010),a motivated students felt that the inherent support for relatedness (e.g. being part of the class and having the ability to be heard) was key to their transformation (Perlman, 2010). Building upon the SE research, Perlman (2014) engaged a-motivated students in one of two social settings with one group being taught in a context that supported all three psychological needs and the other thwarting their needs. Results of this study indicated that a motivated students involved in a supportive setting reported higher levels of self-determined motivation compared with those in the other group. Similar to the SE research, Perlman (2014) found that the need for relatedness was an important influence on the a-motivated students. Present within much of the a-motivation in PE literature is that the need for relatedness is a cornerstone for change. While autonomy and competence are important psychological needs, a-motivated students tend to gravitate toward a desire to feel connected with their peers and teacher before any behavioral change can occur (Shen, Li, Sun & Rukavina, 2010).

While this research demonstrates that aspects of the social setting can facilitate positive change for the a-motivated students, to date, no research has attempted to manipulate a social setting to be explicitly supportive of relatedness and the influence on the a-motivated students. Therefore, the purpose of this study was to examine the influence of different social settings (e.g. low and high support for relatedness) on the affective outcomes (motivation, engagement and effort) of a-motivated students. This study was guided by the following research questions:

Research Questions

1 What is the influence of the social setting (i.e. low versus high relatedness support) on the motivation of a-motivated students?
2 What is the influence of the social setting (i.e. low versus high relatedness support) on the engagement of a-motivated students?
3 What is the influence of the social setting (i.e. low versus high relatedness support) on the effort of a-motivated students?

Developing Relatedness Support - The Teacher CARE project

The Teacher Creating A Relatedness Environment (CARE) project was designed to assist educators in developing learning environments that enhanced the educational experience for a motivated students in physical education by supporting their need for relatedness.

The program emerged through the concerns of a group of secondary physical education teachers wishing to assist students with low levels of motivation. As a collective the teachers identified three elements they wished to influence in relation to their low motivated students: motivation, engagement and effort. These teachers then requested to learn and apply strategies that could meet the aforementioned elements in regards to the a-motivated students.

Development of the CARE project was grounded in both the SDT education and physical education literature (Tessier, Sarrazin & Ntoumanis, 2008; 2010) and research on a motivation in physical education (Perlman, 2010; 2011; 2012a; 2012b, 2014; Wallhead et al., 2013). The key foundational factor for motivation identified by previous research was that the teacher and classmates play an initial key role in students feeling supported in autonomy, relatedness and competence (Deci & Ryan, 2002). However, none had ever separated or prioritized any of the three areas of support, despite a motivation literature identifying the importance of relatedness as a catalyst for motivational change in the a-motivated student (Perlman, 2010). Therefore, the primary focus of the CARE project was to assist teachers in developing their abilities to support the concept of relatedness. Instructional aspects identified as supporting student relatedness were drawn upon the work of Sheldon and Filak (2008) and are displayed in Table2.

Table 2. Instructional aspects to support student relatedness

1.	Takes time for other student concerns
2.	Demonstrate care for the student
3.	Possess detailed knowledge about the each student
4.	Express enjoyment and appreciation
5.	Enjoys being with the other person
6.	Shares personal resources, such as time, attention, energy, interest and emotional support
7.	Teacher acknowledges negative behaviors and affect
8.	Give students a chance to voice opinions
9.	Develop learning activities with an educational focus and decreased focus on elite forms of movement/sport
10.	Keeping students accountable to the learning elements and provided the ability to negotiate aspects that facilitate learning
11.	Creating and implementing inclusive activities
12.	Creating a context that is grounded in elements of fair play and sports personship

Design and implementation of the CARE project was initially conducted with a cohort of 10teachers whereby each engaged in a learning module that taught the general principles of SDT (Deci & Ryan, 2002), benefits of motivated students (Deci & Ryan, 2002), constructs and concepts around a motivation (Ntoumanis, et al., 2004; Perlman, 2010) and elements of instruction that can facilitate support for relatedness (Sheldon & Filak, 2008). The mode of this professional learning module followed the guidelines outlined in previous studies designed to enhance the motivational instruction of teachers in physical education (Tessier, Sarrazin & Ntoumanis, 2008; 2010).

Teachers were ask to practice their instructional skills by developing sample lesson activities, answering scenario questions, as well as implement a pilot test of their lessons with two classes. It is important to note, that for the purpose of this study each teacher was asked to deliver a unit that was both high and low in their level of relatedness support. The intent of having the same teacher deliver both instructional styles was to control for teacher-effects. Evaluation of teacher instruction with the pilot test classes was conducted using the same procedures used to assess the fidelity of instruction with the classes used within the actual study and explained later in this article. Results of the pilot test revealed that all teachers could implement both styles of instruction with their classes based on the pre-determined criteria of students in the high relatedness group reporting a significant increase in their perceived level of relatedness support when compared with the low relatedness group. Collection of student data is articulated later in this paper.To ensure a level of consistency in terms of unit of study, it was agreed upon by all teachers that students would be engaged in a 10-lesson unit of soccer.

Participants and settings

A total of 147 (male=58; female=89) a-motivated Year 9 students from 5 schools were recruited for this study. Identification of the a-motivated students was conducted by having all students complete a battery of motivational surveys: Self-Regulation Questionnaire for Physical Education autonomous sub scales (SRQ-PE; Goudas, Biddle & Fox, 1994), Academic Motivation Scale for Physical Education a-motivation scale (AMS-PE; Vallerand, Pelletier, Blais, Briere, Senecal&Vallieres, 1992) and the Situational Motivation Scale (SIMS; Guay, Vallerand, & Blanchard, 2000).

Classification of a-motivated students were those who scored extremely low on the two autonomous motivation scales (SQR-PE), extremely high on the a-motivation scale (AMS-PE) and were classified into the bottom 10% for overall motivation (SIMS). Motivational thresholds for each subscale and the identification of the target population (a-motivation) were grounded in previous a-motivation studies (Ntoumanis, et al., 2004; Perlman, 2010). Furthermore, teachers were provided an observational assessment that listed behaviors of an a-motivated student in physical education and asked to identify all students they perceived as falling into these categories. The observational assessment was based on the work and study of Perlman (2012a).

Measurement of study variables

Motivation. Individual motivational levels were measured using the Situational Motivation Scale (SIMS; Guay, Vallerand, & Blanchard, 2000). The SIMS is a 16-item self-report questionnaire that provides individual scores for intrinsic motivation, identified regulation, external regulation and a-motivation. Each student rated their level of agreement on each item using a 7-point Likert scale with descriptors of 1=”does not correspond at all” and a 7=”corresponds exactly”. Each subscale was used to calculate an overall level of motivation using the following calculation [(2 * intrinsic motivation) + (identified regulation)] – [(external regulation) + (2 * a-motivation)]. The SIMS has been used extensively within the PE field and is supported high level of validity and reliability (Guay et al., 2000; Standage et al., 2003).

Engagement. Students were asked to complete an adapted self-report engagement scale based on the original work of Skinner, Furrer, Marchand and Kindermann (2008) and

later applied within the PE setting (Shen, McCaughtry, Martin, Fahlman& Garn, 2012). This scale is a 5-item 7-point Likert scale whereby students rated their level of agree using the following descriptors of 1 = "not at all" and a 7 = "very much". The engagement scale used within the study has been identified as possessing an appropriate level of internal consistency with α levels of .71 (Skinner, et al., 2008).

Effort. The Intrinsic Motivation Inventory Effort subscale (IMI-E; McAuley, Duncan, &Tammen, 1989) was used to measure student's level of perceived effort. The IMI-E is a 4-item scale that uses a 7-point Likert scale ranging from 1="strongly disagree" to a 7="strongly agree". The use of the IMI-E in secondary PE has supported an adequate level of validity and reliability (Wallhead & Ntoumanis, 2004).

Psychological Needs. Students psychological needs support were measured using the Basic Psychological Needs Scale in Physical Education (BPNS-PE; Ntoumanis 2005). The BPNS-PE is a 21-item 7-point Likert scale. Subscales scores for perceptions of autonomy, competence and relatedness are calculated by averaging 7-items. The BPNS-PE is a well-validated tool within secondary PE (Vlachopoulos, Katartzi & Kontou, 2011). The purpose of measuring student's psychological needs was to ensure that the intervention supported the need for relatedness (i.e. significant change), while needs for autonomy and competence remained constant (i.e. lack of significant change).

Procedures

Before beginning this study, university ethics approval was granted. In addition, all teachers provided their informed consent, while parents/guardians provided consent for student's participation. Survey data were collected using a pretest and posttest design whereby all students completed the SRQ-PE, AMS-PE, SIMS, PE engagement scale, IMI-Eand BPNS-PE in a classroom setting. It should be noted, that posttest data collection did not include the SRQ-PE and AMS-PE. Surveys were completed the day before and at the end of the study. Administration of the surveys was conducted by a graduate student unaffiliated with the study and took around 25 minutes to complete. It should be noted that all Year-9 students (not just students identified as a-motivated) completed the battery of surveys. This was done to (a) classify the a motivated students with the pretest SRQ-PE, AMS-PE and SIMS data and (b) alleviate any bias or issue of identification of students during the posttest data collection phase.

Data Analysis

Data were analyzed in a three-stage model of (a) identification of level of analysis and student population, (b) fidelity of treatment and (c) examination of study purpose. Level of analysis was calculated using Intra-class Correlation Coefficients (ICCs). Results of the ICCs for both the pretest and posttest dependent variables were negative and insignificant supporting the use of the individual as the level of analysis (Kenny & LaVoie, 1985). Identification of a-motivated students was conducted by analyzing data collected from SRQ-PE, AMS-PE and pretest SIMS. To be classified as a motivated, students must have scored below 3.5 on both autonomous scales and above 4.5 on the a-motivation scale (Ntoumanis, et al., 2004). Furthermore, only students who were categorized into the bottom 10% of SIMS and identified as a motivated by their teacher were included within the study.

Means, standard deviations and Cronbach alpha's were conducted for all pretest and posttest variables. Assessment of intervention fidelity was examined using three separate (2 X 2) Repeated Measures Analysis of Variance (ANOVA) calculations conducted for Autonomy, Competence and Relatedness. To examine the research questions, separate (2 X 2) Repeated Measures ANOVA calculations were conducted for each dependent variable. The goal of each ANOVA calculation was a significant interaction effect. Each significant ANOVA calculation was followed up with a pairwise comparison and graphed to illustrate the location of the change.

Results

Descriptive statistics and reliability analysis are displayed in Table 3. Fidelity of implementation was supported as RM ANOVA calculations revealed a significant interaction effect for Relatedness Wilks' λ=.820, $F(1,145)$=31.87, $p \leq .05$, $\eta 2$=.180 while Autonomy Wilks' λ=.988, $F(1,145)$=1.81, $p \geq .05$, $\eta 2$=.012and Competence Wilks' λ=.998, $F(1,145)$=0.28, $p \geq .05$, $\eta 2$=.001were deemed insignificant. Examination of the outcome variables revealed significant interaction effects for SDI Wilks' λ=.963, $F(1,145)$=5.54, $p \leq .05$, $\eta 2$=.037, Engagement Wilks' λ=.920, $F(1,145)$=12.56, $p \leq .05$, $\eta 2$=.080 and Effort Wilks' λ=.699, $F(1,145)$=62.32, $p \leq .05$, $\eta 2$=.301 with students in the treatment group reported higher levels of each compared with the control group. Table 4 provides pairwise calculation, while Charts 1 – 4 illustrate the significant changes for each dependent variable.

Table 3. Descriptive statistics (means and standard deviations) and reliabilities

	Support		Control		
	M	SD	M	SD	α
SDI Pretest	-3.57	2.53	-3.61	2.40	.92
SDI Posttest	-2.99	2.52	-3.55	2.25	.91
Engagement Pretest	2.14	1.16	2.12	1.14	.85
Engagement Posttest	2.80	1.11	2.08	1.10	.84
Effort Pretest	2.70	1.11	2.72	1.08	.82
Effort Posttest	3.42	1.12	2.70	1.09	.84
Autonomy Pretest	3.07	0.93	3.08	0.93	.88
Autonomy Posttest	3.06	0.94	3.07	0.91	.87
Competence Pretest	3.06	0.94	3.09	0.96	.86
Competence Posttest	3.07	0.90	3.05	0.92	.88
Relatedness Pretest	3.04	0.95	3.09	0.92	.89
Relatedness Posttest	3.89	0.86	3.06	0.93	.88

Note: * denotes significance ≤ .05

Table 4. Pairwise Comparison

Variable	(I)	(J)	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval Lower Bound		Upper Bound
SDI	High Support	Low Support	-.185	.079	.020	-.340	to	-.030
Engagement	High Support	Low Support	-.327	.092	.001*	-.509	to	-.145
Effort	High Support	Low Support	-.358	.047	.000*	-.450	to	-.266
Relatedness	High Support	Low Support	-.403	.075	.000*	-.551	to	-.255

Note: * denotes significance ≤ .05

Chart 1

Pretest and Posttest Means for Self-Determination Index

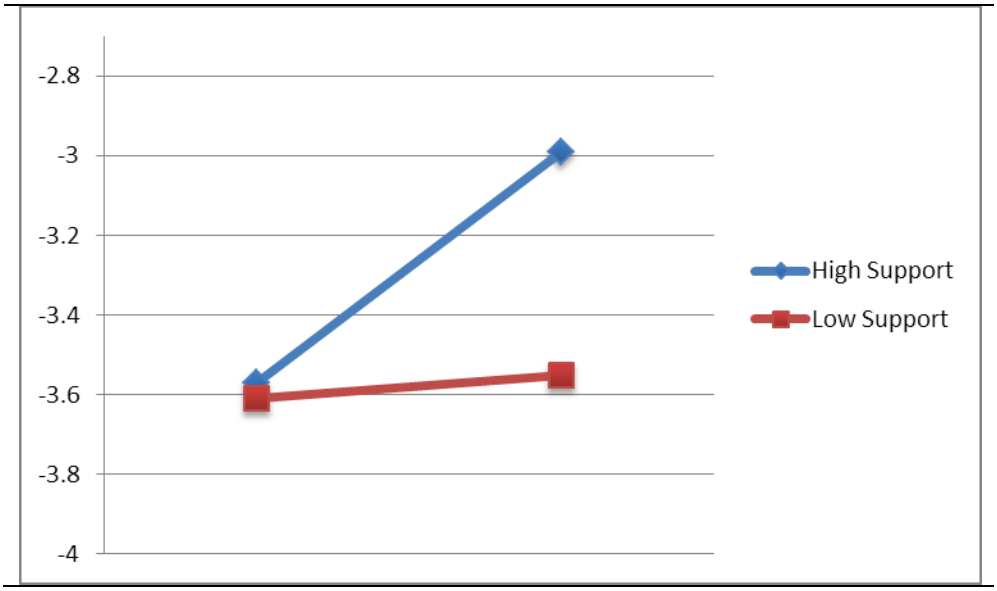


Chart 2

Pretest and Posttest Means for Engagement

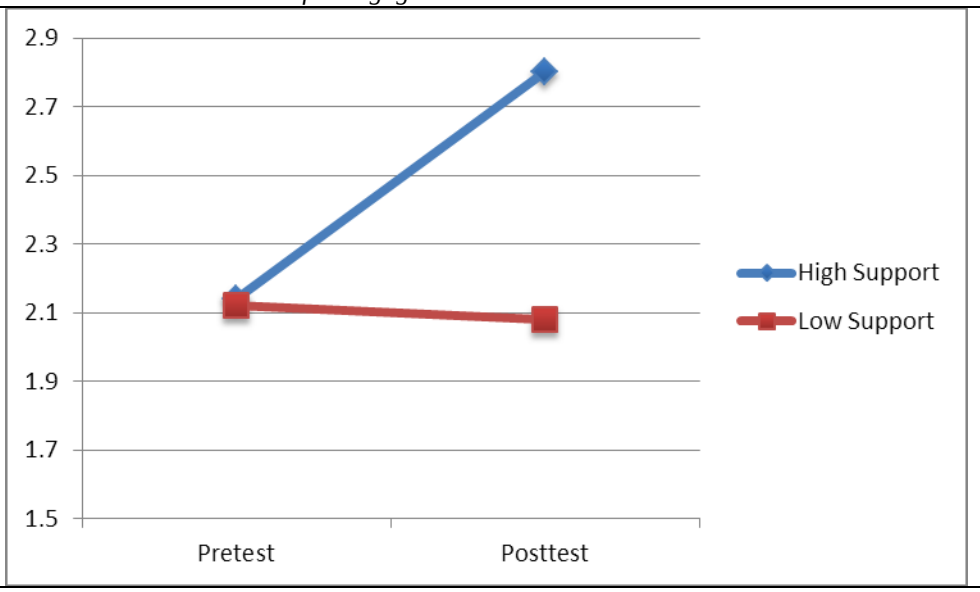


Chart 3

Pretest and Posttest Means for Effort

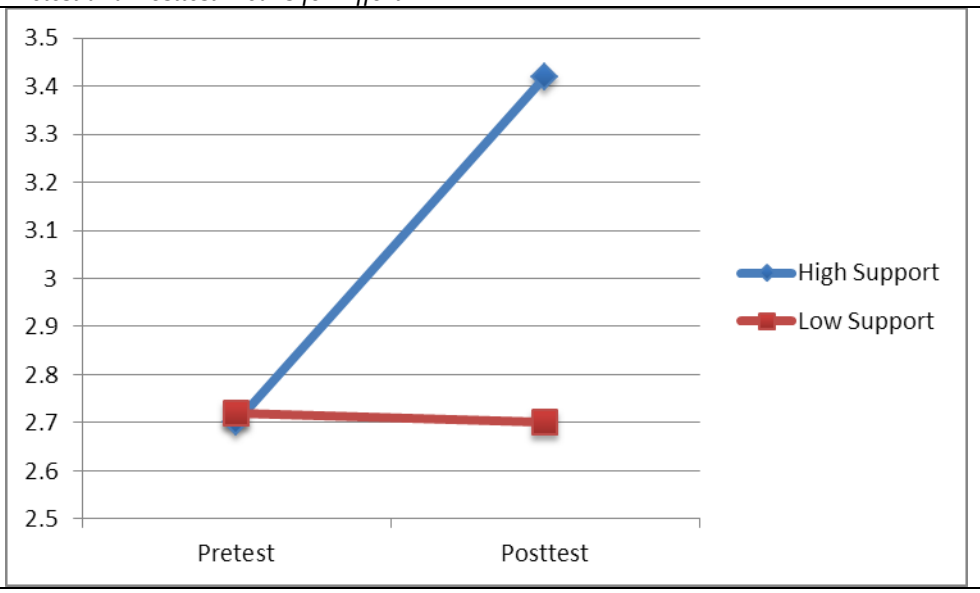
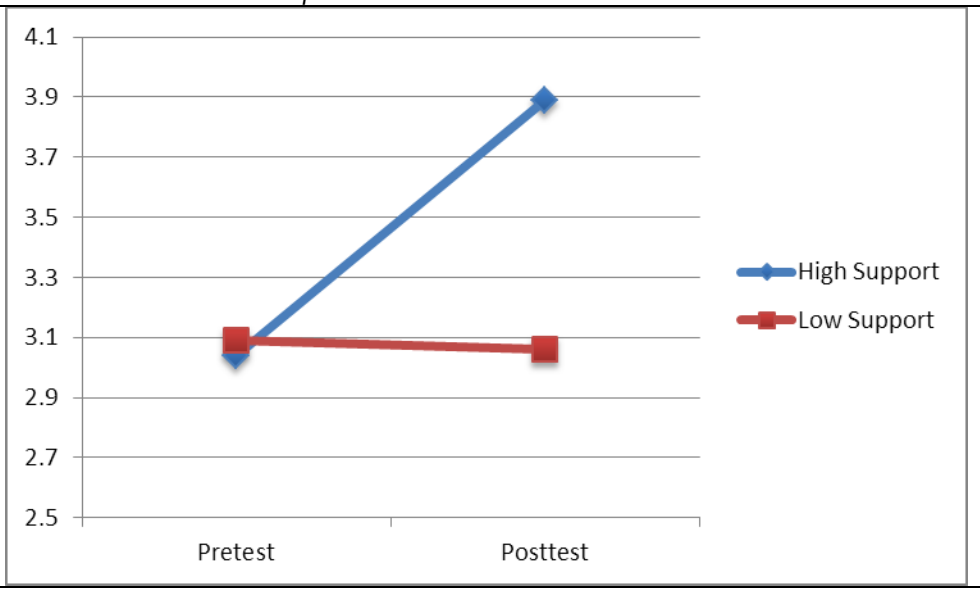


Chart 4

Pretest and Posttest Means for Relatedness



Discussion and Conclusion

The purpose of this study was to examine the influence of a relatedness-supportive instructional approach on the motivation, engagement and effort of a-motivated students. Results of this study illustrated that teachers were able to support student's need for relatedness without changing the perceptions of autonomy and competence. Furthermore, the dependent variables of motivation, engagement and effort improved significantly for students taught using a high relatedness-supportive setting when compared with the low relatedness supportive group.

This study supports and extends the knowledge associated with the use and effectiveness of SDT-based instruction within physical education (Van den Berghe Vansteenkiste, Cardon, Kirk & Haerens, 2014) and more important to this study with students who possess low levels of motivation (Perlman, 2014). The aspect of this study that extends the current SDT knowledge is (a) facilitating affective change (e.g. motivation, effort and engagement) for low motivated students is possible and (b) using instruction that is focused on the need of relatedness seems to be a key aspect when working with a motivated students.

Positive affective and behavioral change can occur for a motivated students in PE. Perlman (2010; 2011; 2012a; 2012b) and Walllhead, Garn, Vidoni and Youngberg (2013) revealed that engaging students in a model of instruction that inherently supports all three psychological needs can influence positive affective and behavioral change for the a motivated student. Shen, Li, Sun & Rukavina, (2010) suggested that a powerful factor in developing a context that meets the needs of the low motivated student is the student and teacher interactions. Much of the aforementioned research was based on the notion that instructional approaches needed to be supportive of all three psychological

needs whether directly or inherent within the model. A synthesis of findings associated with a motivation and the focus of this study was that the need for relatedness seemed to be a key ingredient that was necessary to initially meet the needs of the low motivated student.

As discussed earlier, relatedness is focused on developing a caring and empathetic setting (Bauemeister& Leary, 1995). Much of the a-motivation literature supports the need for aspects whereby their needs are cared for or at least acknowledged (Perlman, 2010). Supporting elements such as autonomy and competence may not be the most relevant or align with the reasons why the low motivated do not engage in class. This concept of supporting only one need is contraindicative to SDT, whereby Deci and Ryan (1985) stated that a supportive setting should be supportive of all three needs as the most beneficial means for changing individual motivation. Results from this study seem to indicate that motivational levels (i.e. a motivation) may need to be supported in different ways. However, Deci and Ryan (1985) suggest that supporting of needs can be viewed in a manner whereby supporting one need may facilitate change. This study is supportive of this claim and in particular the strength of relatedness was strong enough to change the motivational level of the a-motivated student. Furthermore, the construct of motivation is aligned with levels of engagement (Subramaniam, 2009) and effort (Ferrer-Caja& Weiss, 2000). As such, an inference could be made that as student's level of motivation increased as would the effects on engagement and effort. While these results demonstrate promise they are not without limitations and need for further inquiry. This study manipulated the need for relatedness without supporting the need for autonomy and competence. Future studies could use a more comparative approach that engaged students in settings that supported each need to allow for an enhanced understanding the influence of each need of the a motivated student. Furthermore, as supportive setting literature is mostly grounded in the concept of all three needs, more focus on understanding the applied or practical strategies that a teacher can use in their class setting to support relatedness can assist the practitioner in providing instruction that can meet the needs of an a motivated student.

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