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Dana J. Perlman

University of Wollongong, dperlman@uow.edu.au

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Abstract

An aspect deemed important in regards to student learning in physical education is the ability to demonstrate diverse skills within a variety of movement settings (National Association for Sport and Physical Education, 2004). Alderman, Beighle and Pangrazi (2006) suggest that motivation is a powerful influence on student learning of importance to this study is how to facilitate learning (i.e. psychomotor and cognitive) for students with low levels of motivation. The purpose of this study was to examine the influence of self-determined pedagogy on amotivated student's motivation and game play. 81 (Male=41; Female=40) amotivated students were engaged in one of two treatment groups (self-determined pedagogy or control). Data were collected using a pretest and post test design whereby students completed a battery of motivational surveys and played a twenty-minute game of volleyball. Data were analyzed using multiple repeated measures ANOVAs and revealed a significant change in amotivated student's level of relatedness and game play involvement. Results indicate support for using a self-determined approach toward teaching when meeting the needs of students with low levels of motivation.

Keywords

determined, play, game, influence, student, amotivated, pedagogy, self

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SELF-DETERMINED PEDAGOGY AND THE AMOTIVATED STUDENT: INFLUENCE ON STUDENT GAME PLAY

Dr. Dana Perlman

ABSTRACT

An aspect deemed important in regards to student learning in physical education is the ability to demonstrate diverse skills within a variety of movement settings (National Association for Sport and Physical Education, 2004). Alderman, Beighle and Pangrazi (2006) suggest that motivation is a powerful influence on student learning of importance to this study is how to facilitate learning (i.e. psychomotor and cognitive) for students with low levels of motivation. The purpose of this study was to examine the influence of self-determined pedagogy on amotivated student's motivation and game play. 81 (Male=41; Female=40) amotivated students were engaged in one of two treatment groups (self-determined pedagogy or control). Data were collected using a pretest and post test design whereby students completed a battery of motivational surveys and played a twenty-minute game of volleyball. Data were analyzed using multiple repeated measures ANOVAs and revealed a significant change in amotivated student's level of relatedness and game play involvement. Results indicate support for using a self-determined approach toward teaching when meeting the needs of students with low levels of motivation.

Key Words: *Self-Determination Theory, Amotivation and Game Performance*

Self-Determined Pedagogy and the Amotivated Student: Influence on Student Game Play

Understanding factors that facilitate learning within physical education are paramount. An aspect deemed important in regards to student learning in physical education is the ability to demonstrate both psychomotor and cognitive skills within a

variety of movement settings (National Association for Sport and Physical Education, 2004). Alderman, Beighle and Pangrazi (2006) suggest that an important aspect that can influence student learning is the construct of motivation. Of importance to this study is how to facilitate learning (i.e. psychomotor and cognitive) for students with low levels of motivation. Therefore,

the aim of this study was to understand the influence of a motivationally grounded pedagogical approach on the elements of learning for low motivated students.

Self-Determined Pedagogy

The underlying concepts and principles of self-determined pedagogy and student motivation were based within Self-Determination Theory (SDT: Deci & Ryan, 1985). Motivation espoused by SDT is a multi-faceted concept that has been used to explain what and why of human behavior (Deci & Ryan, 1985). As such, external influences such as the social setting play an integral part of the motivational process (Deci & Ryan, 2004). The concept of the social setting is important from a teaching and learning perspective as this element is the primary aspect a teacher can influence (Reeve, Jang, Carrell, Jeon & Barch, 2004). A social setting can be viewed in terms of the relative autonomy-support perceived by the individual (Deci & Ryan, 2000). From a SDT perspective, the social setting can be viewed as autonomy-sup-

portive or controlling (Deci & Ryan, 2000). An autonomy-supportive setting is focused on providing students with choice or a feeling of inclusivity (Reeve, et al., 2004; Perlman & Webster, 2011). On the contrary, a controlling setting will focus on the use of pressure, guilt and deadlines to facilitate students toward a goal (Reeve, et al., 2004; Perlman & Webster, 2011).

Depending on the level of autonomy-support perceived within the specific educational setting, a student is supported in their psycho-social needs (Deci & Ryan, 2004). Specifically, Deci and Ryan (1985) state that each student will perceive a level of psycho-social support categorized into three concepts; autonomy, competence and relatedness (Ryan, Gagné, Leone, Usunov, & Kornazheva, 2001; Deci & Ryan, 2004). The definitions and understanding of each psychological need is well articulated in the current literature (Deci & Ryan, 2004). Each psychosocial need has a powerful influence over the overall motivation of students (Ryan & Deci, 2000).

Much of the educational research on autonomy-supportive and controlling settings illustrate that students flourish in a more supportive context (Black & Deci, 2000; Reeve, 2006). Specifically within physical education, students engaged in an autonomy-supportive context are more motivated (Ward, Wilkinson, Graser & Prusak, 2008; Murcia, Lacarcel & Alvarez, 2010) and engaged in higher levels of health-enhancing physical activity (Perlman, 2013).

Amotivation and Physical Education

Motivation is viewed as why we engage in certain behaviors (Deci & Ryan, 1985). As such, people and students are motivated by diverse reasons and the focus of this study is students with extremely low levels of motivation also termed amotivated (Vallerand, 2001). A typical definition of amotivation are students who possess such low levels of motivation that they will not engage in a specific behavior and spend more time and effort getting out of the specific task (Ntoumanis, Peensgaard, Martin & Pipe,

2004). For instance, within physical education the amotivated student will likely come to class with excuse notes or not even show up for class (Ntoumanis, et. al., 2004). Amotivation has been aligned with behaviors such as decreased levels of in-class physical activity (Perlman, 2012a), engagement (Wallhead, Garn, Vidoni & Youngberg, 2013) and dislike for the subject (Perlman, 2012b). While amotivated students can be viewed as a challenging population, recent research has illustrated some promise. Shen, Wingert, Li, Sun and Rukavina (2010) found that the connection between teacher and amotivated students were a powerful influence on their in-class behaviors. In addition, a small area of inquiry focused on changing amotivated students has been to engage those populations in units of Sport Education (SE; Perlman, 2010, 2012a, 2012b; Wallhead, et al., 2013). It should be noted, that SE has been aligned with tenets of SDT (Perlman, 2011; Perlman, 2012c, Perlman & Goc Karp, 2010; Wallhead & Ntoumanis, 2004). Results of the collective works on amotivation and SE illustrated that amotivated students

significantly enhanced their motivational responses (i.e. enjoyment and need for relatedness), in-class physical activity and participation. While research indicates support for infusing a self-determined approach that facilitates an autonomy-supportive context, there is little evidence focused on the amotivated student. Perlman (2012a) indicated a clear need for further inquiry into the applied benefits of autonomy-supportive instruction on both the amotivated student and diverse outcomes such as game play behaviors. Therefore, the purpose of this study was to examine the influence of self-determined pedagogy on amotivated student's motivation and game play.

Research Questions

1. Does self-determined pedagogy influence the motivational responses of amotivated students?
2. Does self-determined pedagogy influence the game play of amotivated students?

Method

Participants and setting

81 (Male = 41; Female = 40) amotivated students were engaged in one of two treatment

groups (self-determined pedagogy or control). Students were enrolled in a required Year-9 physical education class from a secondary school in the United States. Within this study, students were enrolled in a unit of volleyball that lasted twelve 60-minute lessons. Before beginning the study, classes were randomly assigned to either treatment group using a random number generator whereby even number classes were assigned to the treatment and odd number classes were assigned to the control group. Distribution of amotivated students were N=40 (Male=20; Female=20) in the treatment and 41 (Male=21; Female=20) in the control group.

Instructional Approaches

Before modifications to the self-determined pedagogy group (i.e. treatment), the teacher had designed the 12-lesson volleyball unit plan, lesson plans and resources. The unit of study was grounded in a skill-drill-game approach. The focus of developing all lessons and materials before manipulation of the teacher approach was to ensure that students were provided similar learning activities.

In addition, this 12-lesson unit was the basis of the control group instruction. The aforementioned unit plan is illustrated in Table 1.

Table 1
Volleyball Block Plan

| Lesson | Content / Activities |
|---------------|---|
| 1 | Introduction Volleyball Skill Assessment |
| 2 | Forearm Pass Skill Practice Game Play |
| 3 | Set Skill Practice Game Play |
| 4 | Attacking Shots Skill Practice Game Play |
| 5 - 6 | Defensive Positioning and Play Skill Practice Game Play |
| 7 - 8 | Offensive Positioning and Play Skill Practice Game Play |
| 9 - 12 | Round Robin Tournament |

The primary focus of the self-determined pedagogy was the development and impleme-

ntation of instruction that was autonomy-supportive. Development of the teacher's instructional practices required a multi-phase approach. First, the teacher engaged in a 12 hour module that focused on increasing the teachers understanding of SDT, student benefits and how a teacher can implement instructional behaviors that facilitate a highly autonomy-supportive context. Much of this module was based in the work of Jonmarshall Reeve (2006, 2009) and Perlman (2013). Second, the teacher implemented the aforementioned strategies in a pilot study with four classes a semester before the beginning of the study. The pilot study allowed the researcher and teacher to reflect and modify any instructional approaches that may have not been aligned with the study focus. It was the goal of the teacher to (a) implement over 85% of his statements to students as autonomy-supportive and (b) have students report a significant difference between treatment groups on a perceived autonomy-supportive survey. More detail is articulated in the *Verification of Implementation* section.

Verification of Implementation

The goal of the self-determined pedagogy group was to ensure that each lesson provided students with 85% of teacher-initiated statements as autonomy-supportive and that students in the treatment group would report a significantly higher perception of an autonomy-supportive learning setting when compared with the control group.

To measure teacher statements, each lesson was videotaped and coded using the Sarrazin, Tessier, Pelletier, Trouilloud and Chanal (2006) tool. This observational tool has been used in previous physical education research on teacher instruction (Perlman, 2013). In addition, the process, protocols and procedures for the collection, coding and analysis of the observational tool are provided in the original Sarrazin et al. (2006) document. Student perceptions of the level of autonomy-support were measured using the Learning Climate Questionnaire (LCQ; Williams & Deci, 1996). The LCQ is a valid and reliable assessment tool (REF) whereby students are provided

an overall score for the level of autonomy-support perceived in a specific context. The LCQ was administered at the beginning and end of the study.

Dependent Variable Measures

Psychological Needs. Assessment of student's psychosocial needs was conducted with the physical education version of the Basic Psychological Needs Scale (BPNS; Ntoumanis, 2005). Each student was asked to rate their level of agreement using a 7-point scale (1="not true at all" to 7="very true") on 21-items. Participant responses are averaged into three scores for autonomy, competence and relatedness. Ntoumanis (2005) indicated an adequate level of reliability and validity for use of this version of the BPNS in school physical education.

Self-Determined Motivation. The modified 16-item Sport Motivation Scale (SMS; Pelletier, Fortier, Vallerand, Tuson, Brière & Blais, 1995) was used to assess each students overall level of motivation. Students rated each item using a 7-point scale (1="strongly disagree" and 7= "strongly agree") that

are averaged into 4 motivation scores of intrinsic motivation, identified regulation, external regulation and amotivation. In order to calculate the overall level of student motivation (e.g. self-determination) the 4 motivational scores are entered into the self-determination index calculation: $(2 \times \text{intrinsic motivation}) + \text{identified regulation} - (\text{external regulation} + (2 \times \text{amotivation}))$. The modified SMS has been deemed valid and reliable for use within sport based physical education (Ward, Wilkinson, Vincent & Prusak, 2008).

Game Play Behaviors. Assessment of amotivated students game play behaviors were conducted using the Game Performance Assessment Instrument for volleyball [GPAI] (Oslin, Mitchell & Griffin, 1998; Pritchard, Hawkins, Wiegand & Metzler, 2008). During each twenty-minute game of volleyball, participants game play behaviors were coded as appropriate or inappropriate within the areas of skill execution, decision making and adjust. Pritchard, et al (2008) articulated the specific game play elements that were the focus of game

play codes (e.g. what an appropriate adjust movement would look like). Initially an effectiveness score for each category (i.e. skill execution, decision making and adjust) was calculated by averaging the effectiveness of each student per category ($\#$ of appropriate skill execution tallies / $\#$ of inappropriate skill execution tallies). An overall game performance index (GPI) was calculated by averaging all three index scores. A game involvement index (GII) was calculated by providing a summation of all tallies with the exception for those within inappropriate adjust. The GPI was used as a measure of game play effectiveness, while the GII was used as a measure of game play engagement.

Data Collection

During the first week of the semester, students and their parent(s)/guardian(s) provided their written consent to engage in this study during an information session at the school. In week two of the semester all students whom provided their consent completed a battery of surveys designed to identify students with extremely low

levels of motivation. As such, all students completed the self-regulation questionnaire for physical education (SRQ-PE) and the amotivation subscale of the academic motivation scale for physical education [AMS-PE] (Goudas, Biddle & Fox, 1994). The SRQ-PE and AMS-PE are valid and reliable measures for the assessment of student motivation in physical education (Ntoumanis, et al., 2004). Threshold scores for the aforementioned scales were based on previous amotivation in physical education research (Ntoumanis, et al., 2004; Perlman 2010). Next, students were asked to complete the LCQ, BPNS-PE and SMS during the first and last day of the 12-lesson volleyball unit. In addition, all students engaged in a twenty-minute game of 6 versus 6 volleyball during the first and last day of the unit. Multiple video cameras were used to ensure that all courts were visible during each game. It should be noted that all students were asked to complete the surveys to ensure that the Year-9 students did not possess knowledge that amotivated students were the focus of the study.

Data Analysis

Analysis of data were conducted into two main themes: verification of implementation and examination of research questions. Verification of implementation began with coding all teacher statements by two unaffiliated trained coders. Inter-rater calculations were conducted with 40% of teacher video. Next, a (Group X Time) Repeated Measures ANOVA for student's scores for the LCQ was calculated.

Data analysis for the examination of the research questions began with the coding of all game play video. Two trained coders independently observed and coded all game play video. To ensure a level of reliability, inter-rater reliabilities were calculated with 40% of the videos. Individual frequencies for skill execution, decision making and adjust were obtained and further calculated into the GPI and GII for each amotivated student on their pretest and posttest games. Means, standard deviations and Cronbach's alpha were calculated on all pretest and posttest dependent variable measures. To examine the primary

research questions, five separate (Group X Time) Repeated Measures ANOVAs for SDI, Autonomy, Competence, Relatedness, GPI and GII were calculated ($p \leq .01$). Any significant ANOVA calculation was followed up with (a) Bonferonni pairwise calculation and (b) plotted to illustrate where the difference was located.

Results

Verification of Intervention

Initial inter-rater reliability calculation for teacher statements was deemed adequate as there was a 89% agreement for autonomy - supportive statements. In addition, all 12 lessons of the teacher in the intervention group met or exceeded the 85% threshold (Range between 88-92%). Results of the (2 X 2) RM ANOVA for students LCQ data revealed a significant interaction effect Wilks $\lambda = .867$, $F(1,79) = 12.112$, $p = .001$, $\eta^2 = .133$ whereby posttest scores in the treatment group were higher compared with the control group. These results support fidelity that students engaged in the treatment group were provided

an autonomy-supportive learning setting as espoused by this study.

Examination of Research Questions

Table 2 provides descriptive statistics and reliabilities for the dependent variables pretest and posttest scores. Results of the RM ANOVA calculations revealed significant interaction effects for Relatedness Wilks $\lambda = .816$, $F(1,79) = 17.859$, $p = .000$, $\eta^2 = .184$ and GII Wilks $\lambda = .855$, $F(1,79) = 7.259$, $p = .009$, $\eta^2 = .074$. On the contrary, Autonomy Wilks $\lambda = .999$, $F(1,79) = 0.049$, $p = .826$, $\eta^2 = .001$, Competence Wilks $\lambda = .989$, $F(1,79) = 0.875$, $p = .352$, $\eta^2 = .011$, SDI Wilks $\lambda = .978$, $F(1,79) = 1.021$, $p = .315$, $\eta^2 = .015$ and GPI Wilks $\lambda = .990$, $F(1,79) = 0.778$, $p = .380$, $\eta^2 = .010$ were deemed insignificant. Table 3 and Figures 1 and 2 illustrate that significant differences for Relatedness and GII are located between posttest scores.

Table 2
Descriptive Statistics and Cronbach's Alpha for
Dependent Variables

| | Treatment | | Control | | α |
|----------------------|-----------|-------|---------|------|----------|
| | M | SD | M | SD | |
| SDI Pretest | -12.78 | 3.91 | -12.82 | 3.98 | .90 |
| SDI Posttest | -12.13 | 4.21 | -12.84 | 3.98 | .89 |
| Autonomy Pretest | 3.38 | 0.533 | 3.41 | 0.55 | .85 |
| Autonomy Posttest | 3.26 | 0.62 | 3.31 | 0.68 | .84 |
| Competence Pretest | 2.42 | 0.58 | 2.40 | 0.69 | .86 |
| Competence Posttest | 2.25 | 0.81 | 2.36 | 0.66 | .88 |
| Relatedness Pretest | 3.07 | 0.83 | 3.21 | 0.97 | .88 |
| Relatedness Posttest | 3.61 | 0.59 | 3.23 | 0.92 | .87 |
| GII Pretest | 5.95 | 0.83 | 6.05 | 0.81 | .79 |
| GII Posttest | 6.78 | 1.01 | 6.04 | 0.81 | .80 |
| GPI Pretest | 1.92 | 0.84 | 2.00 | 0.82 | .81 |
| GPI Posttest | 1.93 | 0.83 | 2.01 | 0.82 | .82 |

Table 3
Follow-Up Pairwise Comparisons

| <u>SDI</u> | | | | | | 95% Confidence Interval | |
|--------------------|-----------|---------|------------------|------------|------|-------------------------|-------------|
| Interval Phase | (I) | (J) | Mean Diff. (I-J) | Std. Error | Sig. | Lower Bound | Upper Bound |
| Pretest | Treatment | Control | .380 | .890 | .670 | -1.391 | 2.151 |
| Posttest | Treatment | Control | -.323 | .096 | .001 | -.515 | -.131 |
| <u>Relatedness</u> | | | | | | 95% Confidence Interval | |
| Interval Phase | (I) | (J) | Mean Diff. (I-J) | Std. Error | Sig. | Lower Bound | Upper Bound |
| Pretest | Treatment | Control | .111 | .177 | .532 | -.241 | .463 |
| Posttest | Treatment | Control | -.281 | .062 | .000 | -.404 | -.159 |

Figure 1
Significant Plot for Relatedness

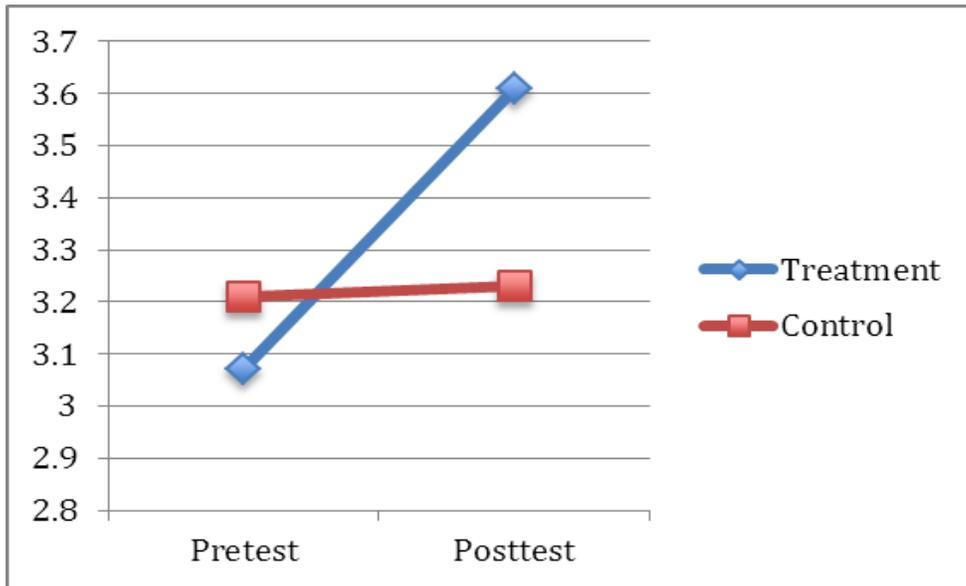
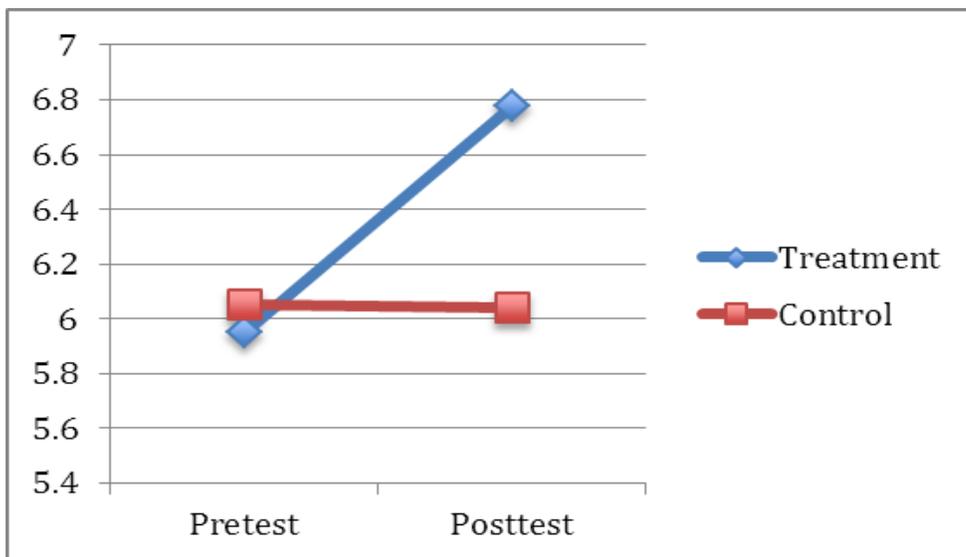


Figure 2
Significant Plot for GII



Discussion

This study examined whether an autonomy-supportive learning setting can influence the motivational aspects and game play behaviors of amotivated students. Results of this study illustrated that amotivated students were significantly more involved in game play, as well as perceived a higher level of relatedness. Furthermore, results indicated that teaching and learning within an autonomy-supportive setting did not have a significant effect on the perception of autonomy, competence, overall motivation or actual game play performance.

The significant results (i.e. Relatedness and GII) illustrate the support that teaching using an autonomy-supportive basis can illicit positive student outcomes. Specifically, these results are aligned with previous studies that demonstrated that students flourish in a physical education setting that is highly autonomy-supportive setting (Ntoumanis, 2001; Standage, Duda & Ntoumanis, 2003; Perlman, 2013). Furthermore, this study demonstrates support of

previous studies whereby amotivated students were more engaged (Wallhead, et al, 2013; Perlman, 2012a) and perceived an increased level of connection (Perlman, 2010; 2012b) when taught in a setting that is aligned with aspects of SDT and an autonomy-supportive setting.

The two significant results within this study were most interesting. Much of the research on amotivation has illustrated that the need for relatedness (e.g. developing connections) as the first and most influential construct that facilitates change. For instance, Perlman (2010) found that when amotivated students were engaged in a unit of study taught using the Sport Education Model (Siedentop, 1984) the only psychological need that significantly changed was relatedness. A plausible reason could be that amotivated students must first feel a connection with either their classmates or teacher to begin to engage in class activities. To further support this claim, the significant change associated with game involvement lends support that amotivated students were more engaged in the actual game. It

could be pointed out that when a student perceives a level of caring and connection with other students and/or their teacher this could support an amotivated students attempt toward being a part of more class activities. Green Demers, Legault, Pelletier and Pelletier (2008) indicated that amotivated students feel that school activities are unappealing and that is a major reason for the lack of engagement. An inference could be made that the increased connection in class may have facilitated the perception that volleyball was more appealing, thus the increased level of involvement.

While the results associated with amotivated students overall motivation, game performance, perceptions of autonomy and competence were insignificant these results should be addressed. Game performance is a measure of game play effectiveness. While involvement level did increase this did not translate into better game play. Attribution of this lack of change could be a matter of time. With students only being provided at most 12 hours to

work on their volleyball skills, it would be a large task to see any relevant level of change in regards to performance. It should be noted that while not significant, the level of GPI for those students engaged in the self-determined pedagogy class did increase, while those in the control group tended to stay the same. The minor growth between pretest and posttest GPI scores could be influenced by the increased involvement that in turn could have allowed the amotivated student more time on task or opportunities to practice game related skills or movements.

The lack of change associated with overall motivation, competence and autonomy is consistent with previous amotivation studies (Perlman, 2010; Perlman, 2012b). The development of an individuals motivational profile (i.e. amotivation) can be developed over their entire educational career. While results from this study indicated initial development within some motivational responses, it would seem a difficult task to significantly change a student's level of self-determination in a

single unit. In addition, supporting the need for competence and autonomy tend to more focused on the student in contrast with the need for relatedness. Specifically, providing choice (autonomy) and demonstrating success (competence) is contingent on the student and their abilities to work within the physical education setting. Perlman (2010) suggested that focusing on giving students choice and individual success is irrelevant if a student does not desire to engage in the activity or class. For instance, if a teacher gave the amotivated student choice over their in-class behavior an inference can be made that these students would leave the class or sit down.

The findings from this study illustrate more evidence that instructional approaches based within SDT can be viewed as effective pedagogy. In addition, amotivated students behaviors are not a fixed construct and can be positively influenced by the teacher and their behaviors. A practical recommendation from this study would be that teachers may focus on supporting the need for relatedness

(e.g. demonstrating caring and empathy) as an initial pathway for meeting the needs of the amotivated student. While these results demonstrate initial promise in helping amotivated student it is not without limitations. This study was conducted in a single sport unit of volleyball. The transferability of these results within different units of study may need further inquiry. In addition, future research is needed to better understand what elements self-determined pedagogy tend to support students in terms of diverse motivational levels.

References

- Alderman, A., Beighle, A., & Pangrazi, R. (2006). Enhancing motivation in physical education: promoting intrinsic motivation, enhancing perceived physical competence, and creating a mastery-oriented environment will increase students' enjoyment of physical activity. *The Journal of Physical Education, Recreation & Dance*, 77(2), 41.
- Black, A. E., & Deci, E.L. (2000). The effects of instructors' autonomy support and students' autonomous motivation on learning organic chemistry: A self-determination theory perspective. *Science Education*, 84, 740-756.

- Deci, E.L., & Ryan, R. M. (1985). Intrinsic motivation and self-determination in human behavior. New York: Plenum.
- Deci, E.L., & Ryan, R.M. (2000). The "what" and "why" of goal pursuits: human needs and the self-determination of behavior. *Psychological Inquiry*, 11,227-268.
- Deci, E.L., & Ryan, R.M. (2004). *Handbook of self-determination research*. Rochester, NY: The University of Rochester Press.
- Deci, E. L., Ryan, R. M., Gagné, M., Leone, D. R., Usunov, J., & Kornazheva, B. P. (2001). Need satisfaction, motivateion, and well-being in the work organizations of a former eastern bloc country. *Personality and Social Psychology Bulletin*, 27,930-942.
- Goudas, M., Biddle, S.J.H., & Fox, K.R. (1994). Perceived locus of causality, goal-orientations, and perceived competence in school physical education classes. *British Journal of Educational Psychology*, 64, 453-463.
- Green-Demers, I., Legault, L., Pelletier, D., & Pelletier, L.G. (2008). Factorial invariance of the academic amotivation inventory across gender and grade in a sample of Canadian high school students. *Educational and Psychological Measurement*, 68, 862-880.
- Murcia, J.A.M., Lacarcel, J.A.V., & Alvarez, F.D. (2010). *Search for autonomy in motor task learning in physical education university students*. *European Journal of Psychology of Education*, 25, 37 -47.
- National Association for Sport and Physical Education. (2004). *Moving into the future: National standards for physical education*. Reston, VA.
- Ntoumanis, N. (2001). A self-determination approach to the understanding of motivation in physical education. *British Journal of Education Psychology*, 71, 225-242.
- Ntoumanis, N. (2005). A prospective study of participation in optional school physical education using a self-determination theory framework. *Journal of Educational Psychology*, 97, 444-453.
- Ntoumanis, N., Pensgaard, A., Martin, C., & Pipe, K. (2004). An idiographic analysis of amotivation in compulsory school physical education. *Journal of Sport and Exercise Psychology*, 26, 197-214.
- Oslin, J., Mitchell, S., Griffin, L. (1998). The Game Performance Assessment Instrument (GPAI): Development and preliminary validation. *Journal of Teaching in Physical Education*, 17, 231-243.
- Pelletier, L., Fortier, M.S., Vallerand, R.J., Tuson, K.M., Brière, N. M., & Biais, M. R. (1995). Towards a new measure of intrinsic motivation, extrinsic motivation, and amotivation in sports: The Sport Motivation Scale (SMS). *Journal of Sport and Exercise Psychology*, 17, 35-53.
- Perlman, D.J. (2010). Changes in affect and needs satisfaction of the amotivated student with the sport

- education model. *Journal of Teaching in Physical Education*, 29 (4), 433-445.
- Perlman, D.J. (2011). Examination of self-determined motivation within the sport education model. *Asia-Pacific Journal of Health, Sport and Physical Education*, 2, 79-96.
- Perlman, D.J. (2012a). The influence of the sport education model on the amotivated students in-class physical activity. *European Physical Education Review*, 18(3), 335-345.
- Perlman, D.J. (2012b). An examination of amotivation within the sport education model. *Asia Pacific Journal of Health, Sport and Physical Education*, 3(2), 141 - 155.
- Perlman, D.J. (2012c). The influence of the sport education model on developing autonomous instruction. *Physical Education and Sport Pedagogy*, 17(5), 493-505.
- Perlman, D.J. (2013). Manipulation of the Social Context on In-Class Physical Activity. *Journal of Teaching in Physical Education*, 32, 42-60.
- Perlman, D.J., & Goc Karp, G. (2010). A self-determined perspective of the sport education model. *Physical Education and Sport Pedagogy*, 15(4), 401-418.
- Perlman, D.J., & Webster, C.A. (2011). Supporting student autonomy in physical education, *Journal of Physical Education, Recreation and Dance*, 82(5), 46-49.
- Pritchard, T., Hawkins, A., Wiegand, R., & Metzler, J. N., (2008). Effects of two instructional approaches on skill development, knowledge and game performance. *Measurement in Physical Education and Exercise Science*, 12, 219-236.
- Reeve, J. (2006). Teachers as facilitators: What autonomy-supportive teachers do and why their students benefit. *The Elementary School Journal*, 106 (3), 225-236.
- Reeve, J. (2009). Why teachers adopt a controlling motivational style toward students and how they can become more autonomy supportive. *Educational Psychologist*, 44(3), 159-175.
- Reeve, J., Jang, H., Carrell, D., Jeon, S., & Barch, J. (2004). Enhancing students' engagement by increasing teachers' autonomy support. *Motivation and Emotion*, 28 (2), 147-169.
- Ryan, R. M. & Deci, E.L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, 55, 68-78.
- Sarrazin, P., Tessier, D., Pelletier, L., Trouilloud, D., & Chanal, C. (2006). The effects of teachers' expectations about students' motivation on teacher's autonomy-supportive and controlling behavior. *International Journal of Sport and Exercise Psychology*, 4, 283-301.

- Shen, B., Wingert, R. K., Li, W., Sun, H., & Rukavina, P. B. (2010). An amotivation model in physical education. *Journal of Teaching in Physical Education, 29*, 72-84.
- Siedentop, D. (1994). *Sport education: quality P.E. through positive sport experiences*. Champaign: Human Kinetics.
- Standage, M., Duda, J., & Ntoumanis, N. (2003). A model of contextual motivation in physical education: Using constructs from self-determination and achievement goal theories to predict physical activity intentions. *Journal of Educational Psychology, 95*, 97-110.
- Vallerand, R.J. (2001). A hierarchical model of intrinsic and extrinsic motivation in sport and exercise. In: *Advances in motivation in sport and exercise*. Ed: Roberts, G. Champaign, IL: Human Kinetics: 263-319.
- Wallhead, T.L., Garn, A., Vid-oni, C., & Youngberg, C. (2013). Game play participation of amotivated students during Sport Education. *Journal of Teaching in Physical Education, 32*, 149 - 165.
- Wallhead, T.L. & N. Ntoumanis. (2004). Effects of a sport education intervention on students' motivational responses in physical education. *Journal of Teaching in Physical Education, 23*, 4-18.
- Ward, J., Wilkinson, C., Graser, S. V., & Prusak, K.A. (2008). Effects of choice on student motivation and physical activity behavior in physical education. *Journal of Teaching in Physical Education, 27*, 385-398.
- Williams, G. C., & Deci, E.L. (1996). Internalization of biopsychosocial values by medical students: A test of self-determination theory. *Journal of Personality and Social Psychology, 70*, 767-779.