

The Impact of Student Choice on Learner Engagement in Physical Education

A Synthesis Project

Presented to the

Department of Kinesiology Sport Studies and Physical Education

The College at Brockport

State University of New York

In Partial Fulfillment

of the Requirements for the Degree

Master of Science in Education

(Physical Education)

by

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May 8, 2013

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Title of Synthesis Project: The effect of student choices on learner engagement in physical education.

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Date: May 6, 2013

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Abstract

Physical activity levels decline with age and this begins in children as young as sixth grade and continues into adulthood. Research has demonstrated that children ages 12-21 do not regularly participate in vigorous physical activity and that there is a 50-75 percent decrease in physical activity levels from kindergarten to 12th grade (Bryon & Solmon, 2012). Inactivity is attributed to a decrease in motivation due to various factors, including boredom of repeated activities, coeducational classes, and a lack of perceived competence. This synthesis comprised of 14 studies that examined how curriculums that offer choices can have an impact on self-determination and student engagement. Choice in general has been found to increase self-determination in persons of all ages (Deci & Ryan, 2000) and the findings from the critical mass also supports more self-determined learners in physical education when choices are offered. It was also found that students have a desire to choose activities that they enjoy and increase self-competence. Students in general want to receive several opportunities to participate and feel physically challenged. Students lose interest in large-sided games because team sizes are too large. Gender appears to be a factor that influences findings and it appears that males may differ from females in relation to activity preferences. Gender differences are something that physical educators should consider when developing or revising their curriculum. Factors related to choice were examined and then recommendations were provided for implementing choice into a physical education curriculum.

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Acknowledgements

I would first and foremost like to thank my wife, Annie, for all of your encouragement and support throughout my Graduate studies. Your patience has been greatly appreciated. You have been invaluable to my success at SUNY Brockport.

I would also like to thank Dr. Francis Kozub for your support throughout my synthesis. You have gone above and beyond as a professor. Your guidance and feedback has made this synthesis possible.

CHAPTER 1

INTRODUCTION

Physical education teachers are responsible for delivering instruction that will help contribute to a student's quality of life and lifetime fitness. Physical Education is a learning process that focuses on increasing knowledge and affecting attitudes and behaviors relative to physical activities, including exercise, sports, games, dance, aquatic activities, and outdoor adventure activities (Darst & Pangrazi, 2002). These physical activities need to be designed in a thoughtful manner to ensure that students are engaged in their learning as much as possible. Physical educators choose from a variety of curriculum models that they feel best suits their students. This synthesis examined how choice within physical education class effects the engagement and/or willingness to engage of students. Various aspects of choice were studied throughout the literature review. The first is how choice can increase self-determination during physical activity. The second is how choice within curriculum could increase participation and effort in physical education. The third aspect of choice is how coeducational classes or single-gender classes affect their level of effort in the physical education setting.

Background

In this background, several topics are explored. Specific activities were researched as well as how students are self-determined in the physical education setting. Activity preferences within curriculum of both secondary male and female students were also explored. Some of the critical mass also examined how single-gender and coeducational classes can have an affect on participation and opportunities to participate.

Self-Determination

Physical education research has demonstrated that self-determined motivation is positively correlated with active participation/engagement, learning, and mental, psychomotor, and social experiences (Ward, Wilkinson, Graser, & Prusak, 2008). Deci and Ryan (2000) suggest that autonomy is a students' feeling of choice and/or control over their behavior. In physical education, supporting autonomy is achieved when a student is provided and perceives a level of control over a learning task. Furthermore, while the traditionally prescriptive nature of education can be controlling, a student who perceives an activity as informational or meaningful will be supported in their need for autonomy (Deci & Ryan, 2000). Self-determination in physical education is about reshaping class environments to promote active lifestyles independent of size, shape, or abilities.

Self-determination theory (Deci & Ryan, 2000) proposes that as students move along the motivation continuum from amotivation toward intrinsic motivation, there will be an increase in cognition, positive behavior, and participation. According to this theory, the intrinsically motivated student should be more likely to practice physically active behaviors in class, and could possibly become more physically active on his or her own (Ward, Wilkinson, Graser, & Prusak, 2008). The following is a model of self-determination that illustrates various levels of motivation and the continuum of a non-determined to a self-determined learner.

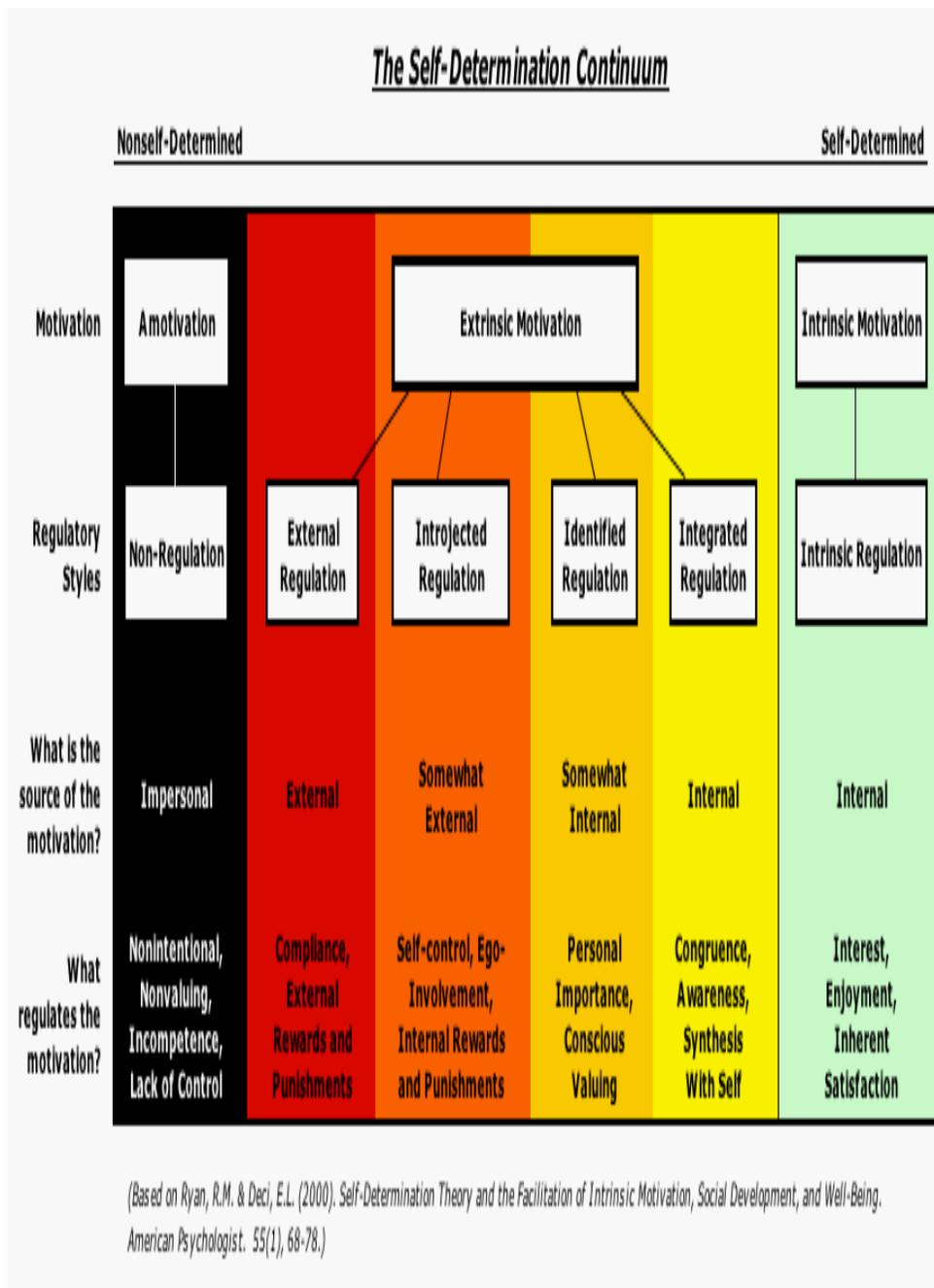


Figure 1. The Self-Determination Continuum. Adapted from Deci & Ryan, 2000. Self-Determination Theory and the Facilitation of Intrinsic Motivation, Social Development, and Well-Being. *American Psychologist*. 55(1),68-78.

Educators need to understand more about age-related declines in self-efficacy for physical activity, particularly in females by the end of primary school. In general, teachers would not argue that discomfort with physicality is more likely to increase with age in females than males. Within the limitations of trend analyses, fewer adolescent females than males have positive experiences in physical education.

Curriculum

A physical education curriculum is a framework of student-centered physical activities that promote physical activity and skill development (Darst & Pangrazi, 2002). Designing a quality curriculum involves many steps including: developing a philosophy and framework, considering environmental factors, determining content standards and student objectives, selecting student-centered activities, organizing units, and evaluating and modifying curriculum. Physical educators also have the decision to choose a curricular model that they feel will most benefit their students.

Many curriculum models have been used for physical education, including the sport education, fitness, and skill-development models. The sport education model is an activity-based approach developed by Siedentop (Darst & Pangrazi, 2002). Its main objective to help students become skilled sports participants and good sports people.

The fitness education model focuses on delivering physical fitness concepts to students. Fitness education has been found to promote knowledge, improve attitudes about activity, and alter lifestyle activity patterns later in life. The skill development model provides students with a progressively arranged physical education curriculum. The model is built on educational theory

and research and on environmental factors that influence learning environments (Darst & Pangrazi, 2002). These are just a few of the well documented curricular models used in physical education classes.

Another model that has been shown to be effective, especially in secondary settings, is the elective model. Within this model, a choice concept can be utilized (Darst & Pangrazi, 2002). Choices may involve the units that they take, activities that they participate in, or having a choice in how they complete a task. Permitting choice within a curriculum can offer many advantages, including increased student participation, enthusiasm, and motivation. These choices can give students a sense of autonomy in their learning as well. Curriculum has been found to be the most important consideration for both males and females in determining their attitude toward physical education (Hill & Hannon, 2008).

Gender

Females are less active than males and there is a decline in females' activity levels during adolescence. Physical educators create a more positive environment for males than they do for females. Less active females are bored with playing traditional sports and would prefer to have a choice in the activities that they participate in (Ward et al., 2008).

In the context of gender issues, offering experiences in lifelong learning acknowledges the diversity of interests and places for learning acceptable to males and females (Ward et al., 2008). In Penny's (2008) article, a student states "If I (was) a PE teacher, I would make the females feel comfortable about what they were doing, about how good they are at their own sports or activities. If they didn't want to participate, I would find out why instead of saying, 'go sit down and fill out this sheet if you're going to be lazy.'" (p.33). This statement from a female

student is not isolated. Many females fear “looking stupid” in physical education or choose not to participate in sports such as team handball, flag football, or basketball because of extreme competitiveness. Males tend to shy away from activities such as yoga, gymnastics, and dance because they feel these are feminine activities (Hill & Hannon, 2008). Many studies have been performed to survey students about their likes and dislikes of activities in physical education. This information can be beneficial for teachers to instill choice within their curriculum to further engagement in their students’ learning.

Scope of the Synthesis

Curriculum design that entails choice has been shown to be an effective tool for increasing student motivation and self-determination (Brooks & Young 2011). However, which types of choices benefit students the most? By creating a critical mass and analyzing the literature, this synthesis will help determine how student choice within physical education curriculum affects their engagement in learning. Utilizing previous research will create a synthesis to inform teachers on how to structure student choices within their curriculum. In this a continuum of choice options will be developed and utilized to provide information on how to incorporate choice into a curriculum and the potential benefits to learners.

Definitions

Autonomy-supportive environments. Ones in which significant others offer choice, provide a meaningful rationale, minimize pressure, and acknowledge the target individual’s feelings and perspectives (Ward, Wilkinson, Graser, & Pruzak, 2008).

Elective Curriculum. A curriculum that allows student choice in physical education. Students can select between several units and activities (Darst & Pangrazi, 2002).

Field Dependent. Individuals that rely upon external factors, such as environments and authorities and are less autonomous in decision making (Liu & Chepyator-Thomson, 2009).

Field Independent. Individuals that rely upon internal factors, such as themselves and are autonomous in their decision making (Liu & Chepyator-Thomson, 2009).

Motivation. The innate energy and driver of behavior (www.activate.edu, 2012).

Perceived Competence. An individual's judgment about his or her ability in a particular area (Weiss, 2000).

Self-Determination Theory. Self-Determination Theory is a theory of motivation and personality that addresses three universal, innate and psychological needs: competence, autonomy, and psychological relatedness. (Deci & Ryan, 2000).

Summary

There are a variety of curriculum models that are used in physical education. They provide a framework for what content is taught, the sequence it is delivered, and how to reach learning standards and objectives. Within each model, there are many opportunities for teachers to allow choice for their students. When students are given autonomy, they can become self-determined learners. Through the review of this critical mass we will examine how choice is utilized in physical education classes and how it effects student motivation and engagement in the process.

CHAPTER 2

METHODS

This section provides information on how the literature search was utilized for the synthesis. This includes literature, keywords, and inclusion criteria for the articles that were chosen. The data for this synthesis was obtained through literature searches from Drake Memorial Library at The College at Brockport. The studies were derived primarily from Eric (EBSCO) and SPORTDiscus.

Physical education was the first keyword used for the search. It produced 46,451 hits. To narrow this down, curriculum and choice were added as keywords to produce 403 hits. With many aspects of choice in physical education, multiple searches were used to receive a larger scope for the critical mass. The keywords of the next searches were physical education, self-determination, and choice. This search produced 10 hits. Self-determination theory provides a theoretical framework to study student motivation. Deci and Ryan (2000) research article on self-determination was used in the introduction for background information on what motivates students in school. The third search used the keywords physical education, autonomy, and engagement which resulted with nine hits. Physical education was used in all three searches because the purpose of this synthesis is to examine student choice and engagement for secondary students.

The inclusion criteria for this synthesis include 1) physical education, 2) choice (curriculum, activities, and tasks), 3) secondary students, (middle school to college students) and 4) articles taken from 2000 to present.

CHAPTER 3

RESULTS

Fourteen articles were chosen as the critical mass for review to complete this synthesis. Based on the inclusion criteria mentioned in the methods, Results from the critical mass provided details on the impact of student choice on engagement by children in physical education. The purpose of this section is to provide results for the discussion that immediately follows. This section will provide results that pertain to physical activity preferences of students as well as their physical activity levels. The link of autonomy to self-determination will also be discussed. Finally, results of single gender versus coeducational classes will be explained. Self-determination, physical activity choice, and gender are the main topics within this synthesis. The results from each area are represented in table 1.

TABLE 1

Summary of Results from Critical Mass ($N = 14$).

Study	Physical Activity Choice	Self-Determination	Gender
Hill & Hannon, 2008	Basketball, Football, Bowling, Swimming, Archery		B- Football, Basketball, Bowling, Table Tennis, Hockey G- Skating, Volleyball, Gymnastics, Soccer, Yoga
Halvari, Ulstad, Bagoien, & Skjesol, 2009	PA ↑ when perceived competence is high for high and low autonomously motivated students	As competence and S-D motivation ↑, PA ↑ at a higher rate for higher autonomous students	M/F students
Wilkinson & Bretzing, 2011	74 % prefer fitness activities over sport related activities		Females reported wanting health promoting, fun, varied, non-competitive lifetime activities

			(Table 1 Cont.)
Study	Physical Activity Choice	Self-Determination	Gender
Bryan & Solmon, 2012		Perception of the PE climate is a stronger influence on students' attitudes than on their levels of self-determination	Pedometer counts were higher in males than females due to "male-dominated" activities in their PE curriculum
Ward, Wilkinson, Graser, & Prusak, 2008	PA levels remained same between 2 groups	Autonomy supportive environments ↑ student S-D	7 th /8 th Female
Prusak, Treasure, Darst, & Pangrazi, 2004		Providing choices significantly increased the situational motivation and lessened the contextual amotivation of the participants	
Liu & Chepyator-Thompson, 2009	FD ↓ PA levels than FI students		Middle school students; males & females
Garn, Cothran, & Jenkins, 2011		Interests in PE based on opportunities to participate and perceived competence	Middle school students; males & females
Hannon & Ratcliffe, 2007	Females ↑ PA in single gender classes Males ↑ PA in coed classes		↑teacher verbal interactions in single gender settings for females
Gibbons & Humbert, 2008	Females reported perceived competence, choice and variety, lifestyle activities, and gender equity most important in PE		Middle school students; female
Gibbons, 2009	Females reported lifetime activities, involvement in curriculum and gender as a course design most important in PE		Senior high; Female
Mouratidis, Sideridis, Vansteenkiste, & Lens, 2011		High autonomously motivated students benefited significantly more from need-supportive environments	Both males & females reported more interest and enjoyment in a need-supportive environment vs. control
Carroll & Loumidis, 2000		Children of high perceived competence participated in significantly more physical activity (quantity and intensity) outside school than those of low perceived competence, but there was no difference in enjoyment levels and quantity of physical activity	

Autonomy/Self-Determination

Environments that support autonomy were found to increase participants self-determination (Halvari, Ulstad, Bagoien, & Skjesol, 2009; Mouratidus, Sideridis, Vansteenkiste, & Lens, 2011; Prusak, Treasure, Darst, & Pangrazi, 2004; Ward et al., 2008). Ward et al. (2008) performed a study comparing a choice to a no-choice group. Students participated in two, seven day fitness units. Each student had an opportunity to be in choice and no-choice groups. Choice groups got to choose what activity they would participate in each day and with what students they would participate with. After the no-choice group received the choice treatment, students became significantly more self-determined which suggests that adding choices may be a powerful approach to foster motivation. Results also stated that once the choice group had their autonomy revoked, their self-determined inventory score plummeted.

Situational Motivation Scale

As the critical mass in this synthesis developed, it was found that a portion of the studies used the Situational Motivation Scale, or SIMS, to determine student motivation. The SIMS is a 16-item self-report inventory that assesses intrinsic motivation, identified regulation, external regulation, and amotivation (Guay, Vallerand, & Blanchard, 2000). Sample statements from the SIMS are “Because I think this activity is interesting” (intrinsic motivation); “Because I think this activity is good for me” (identified regulation); “Because I feel like I have to do it” (external regulation); and “There may be good reasons to do this activity, but personally I don’t see any” (amotivation) (Bryan & Solmon, 2012).

Providing choice in physical education class fosters a sense of autonomy, one of the critical components of self-determination. Bryan & Solmon (2012) provided surveys to assess self-reported physical activity levels, attitude, and motivation. Perceptions of a learning-climate and student attitudes decreased from sixth grade to eighth grade. It was recommended that physical education teachers provide a range of choices within their classes to promote autonomy and increase levels of self-determination of their students. Pruzak et al. (2004) performed a study comparing a choice versus no-choice group walking unit. Students in the choice group got to choose from three activities held simultaneously. They also got to choose the students in their groups. No-choice groups followed a traditional walking unit directed by their teacher. It was found that providing choices significantly increased the situational motivation and lessened the contextual motivation of the participants. This suggests that when students are given choice and autonomy in selecting learning activities, they are more apt to be motivated. These results support a thoughtfully designed curriculum that allows choice while at the same time holding students to a higher level of accountability (Pruzak et al., 2004).

Perceived Competence

When an activity is autonomously motivated, its functional significance is related to perceived challenge and interest. However, feeling autonomous in doing an activity or task may not be enough to be effective at increasing student levels of self-determination (Halvari et al., 2009). According to Self-Determination Theory, students also need to perceive themselves as being competent. Perceived competence is being able to manage your training in order to perform. In other words, feeling that you are good at something provides a sense of perceived competency. A high autonomy support is associated with the highest involvement for highly

competent students. Conversely, among students with low competence, a high autonomy support is associated with the lowest involvement (Halvari et al., 2009). This suggests that supporting autonomy alone may not be important for all students. Students low in competence may feel insecure and fear of failure if their physical education teacher tries to autonomously be involved in activities that they do not have perceived competence in.

When determining factors that influenced individual interest in physical education, it was found that perceived competence emerged as a main theme in multiple studies (Garn, Cothran, & Jenkins, 2011; Halvari et al., 2009). The majority of students surveyed reported that being good at a sport or activity dictated individual interest and they were unlikely to have interest toward an activity in which they perceived themselves as low skilled. In Garn et al. (2011) “I’m not a big fan of soccer because I am not very good at it and don’t have much experience. It’s discouraging when you are not the best at something. I feel like there is no point in trying.” (p.231). The results of this study suggest that perceived competence was highly important in the development of individual interest in physical education, even for highly skilled students.

Physical Activity/Gender

Physical education is more likely to survive if it includes activities that students find desirable since curriculum has been found to be the most important consideration for both males and females in determining their attitude toward physical education (Hill & Hannon, 2008). Gender also influences students’ choice of activities as shown in the following section.

Among the fourteen articles reviewed, five of the studies researched activity preferences of secondary students taking physical education. Of these five studies, three of the studies found

that secondary female students prefer lifestyle physical activities over traditional sport activities (Wilkinson & Bretzing, 2011; Gibbons & Humbert, 2008; Gibbons, 2009). Males prefer more traditional activities such as basketball, football, bowling, swimming, and archery, while females prefer non-contact/competitive activities such as ice skating, gymnastics, yoga, and walking. There are several factors that may influence student selection of certain activities. These factors include societal and environmental influences, gender, student age, student skill level (perceived competence), and level of student physical activity outside of physical education (Hill & Hannon, 2008).

Three studies found common themes for what interests females in physical education. Findings included wanting fun, varied, non-competitive lifetime activities as well as having input in designing the physical education curriculum (Wilkinson & Bretzing, 2011; Gibbons & Humbert, 2008; Gibbons, 2009). The results of Meaningful Participation of Females (2009) stated that the major intent of physical education is to promote lifelong physical activity, so student input seems essential to the design of the course.

Themes related to female physical activity preferences were formulated from student questionnaires. One female student from Gibbons & Humbert (2008) stated, “Basketball, volleyball, soccer, and stupid dodge ball, that’s all we do in PE...The teacher tells us what we should be interested in doing, not what we really want to do.” (p.176). When comparing fitness units to sports units, Wilkinson and Bretzing (2011) found that students prefer fitness. This is because fitness is more accessible into adulthood, according to a majority of students. Fitness is something that can be achieved on your own as compared to team sports where many participants are needed.

Two studies provided results for physical activity levels when choice is presented to the students within their physical education class. Participant's physical activity levels increased when their perceived competence is high for high and low autonomously motivated students (Halvari et al., 2009). Low autonomously motivated, or field dependent participants were found to have lower physical activity levels than high autonomously, or field independent students. It was also found that low autonomous students prefer lifetime activities, such as walking, whereas their high autonomous counterparts prefer more traditional activities that relate to sports, such as basketball or flag football (Liu & Chepyator-Thomson, 2009).

Physical activity levels significantly drop from sixth grade to eighth grade. Children ages 12-21 do not regularly participate in vigorous activity and their participation rate in physical activity decreases by 50-75 percent from kindergarten to 12th grade (Bryon & Solmon, 2012). Sixth graders also showed lower levels of amotivation than seventh and eighth graders (Bryon & Solmon, 2012). Bryon & Solmon (2012) suggests that physical education teachers should provide a range of choices within their classes in order to promote a sense of autonomy and increase levels of self-determination in their classes.

Two studies used pedometers as an objective measure of physical activity during physical education classes. Pedometers are a widely acceptable tool for measuring student levels of physical activity (Graser, Pangrazi, & Vincent, 2009). Bryan and Solmon (2012) and Ward et al. (2008) found no significant differences in step counts between choice and no-choice groups. One explanation to this finding may be that when students are under the supervision of their teacher, regardless of how motivated the students may be, step counts are likely to be very similar (Ward et al., 2009). Both studies, however, did find significant differences in self-

determination between groups. This suggests that while step counts were not significantly increased, choice may increase the likelihood for students to develop positive lifetime physical activity patterns because of its ability to increase motivation and self-determination.

Coed versus Single-Gender

The passage of Title IX in 1972 prohibited sexual discrimination in education. As a result most secondary level public schools made the decision to shift from same-sex to coeducational physical education classes. Hannon and Ratliffe (2007) performed a survey of 75 ninth-grade female's feelings toward coeducational physical education. Approximately one-third of the participants said that they were discouraged by being in class with males. Almost one-fourth of the participants said that they would feel more comfortable being in class with all females as opposed to a coeducational setting. These statistics support the fact that coeducational classes may not be appropriate for all units.

Previous research indicates that unpleasant experiences in physical education related to lack of enjoyment, lack of opportunity, poor self-image, and lack of perceived competence has been a factor negatively affecting physical activity participation (Carroll & Loumidis, 2001). Wilkinson and Bretzing (2011) found that 74 percent of females preferred individual games and 83 percent of males preferred team games. The preference for individual activities among females could be influenced by the lack of opportunity to participate in team sport activities during coeducational physical education due to dominance and preference given to males.

Hannon and Ratliffe (2007) found that male students in the single gender setting had significantly fewer touches per game of flag football and soccer versus males in the

coeducational setting. Female students in the single gender setting had significantly more touches per lesson during flag football, ultimate Frisbee, and soccer versus females engaged in coeducational game play (Hannon & Ratliffe, 2007). The increase of female students' participation in the single gender setting may be due to the elimination of male dominance and the creation of a non-threatening supportive environment. Results also revealed that physical education teachers provide a higher rate of group verbal interaction to female students in single gender settings.

Summary

A summary of findings from the critical mass can be found in Table 1. Environments that support autonomy were found to increase participant's self-determination. One key finding was that students with a low perceived competence struggle to become more self-directed learners compared to peers with a higher self-competence. Students need to feel successful in their skill development and often will avoid physical activity all together to save themselves from embarrassment. When students were provided opportunities for choice, they were found to be more motivated to pursue physical activity because they were in charge of their learning. This synthesis has confirmed the link between autonomy and self-determination. While physical activity levels were not found to have a significant difference between choice and no choice groups in two studies, a significant difference was found between males and females. Males were found to be more active during physical education classes than females. Part of this could be due to the activities that were chosen. The environment that students participate in can affect their participation in physical education. Results also state that females may have more chances to participate in PE when they are grouped with other females. A contrast in activity preferences

were found between males and females. Providing single-gender and coeducational classes, depending on the unit may be beneficial for all students.

CHAPTER 4

DISCUSSION

Findings from the critical mass will be discussed concerning the effect that choice has on student's engagement in physical education. First, a model for understanding choice is provided in figure 2. Then nature of choice will be discussed, including activity and gender choices. Next, the link of choice to self-determination will be discussed. Finally, future recommendations are provided to assist physical education teachers to understand the potential impact that student choice can have on their physical education experience.

A Continuum of Choice

Physical educators need a model to assist in providing choice to students. Further, curriculum design is aided by placing choice on a continuum and focusing on instilling autonomy, and promotes lifelong physical activity among children. Figure 2 illustrates a choice continuum and its relation to student autonomy and self-determination.

Physical Activity/Gender

The results from the critical mass indicate that students desire the opportunity to take ownership in selecting physical activities for physical education. Males tend to enjoy more sport-related, traditional physical activity such as flag football or basketball whereas female walking (Gibbons, 2009; Gibbons & Humbert, 2008; Wilkinson & Bretzing, 2011). More often than not, team sports are taught in PE. Since males prefer more team sports, teachers may prefer to do these kinds of activities in order to cater to the male population of the class. Teacher students show a preference for individual sports and lifelong activities such as gymnastics or centered

environments can often further isolate students that feel intimidated by certain activities, such as team sports that include competition.

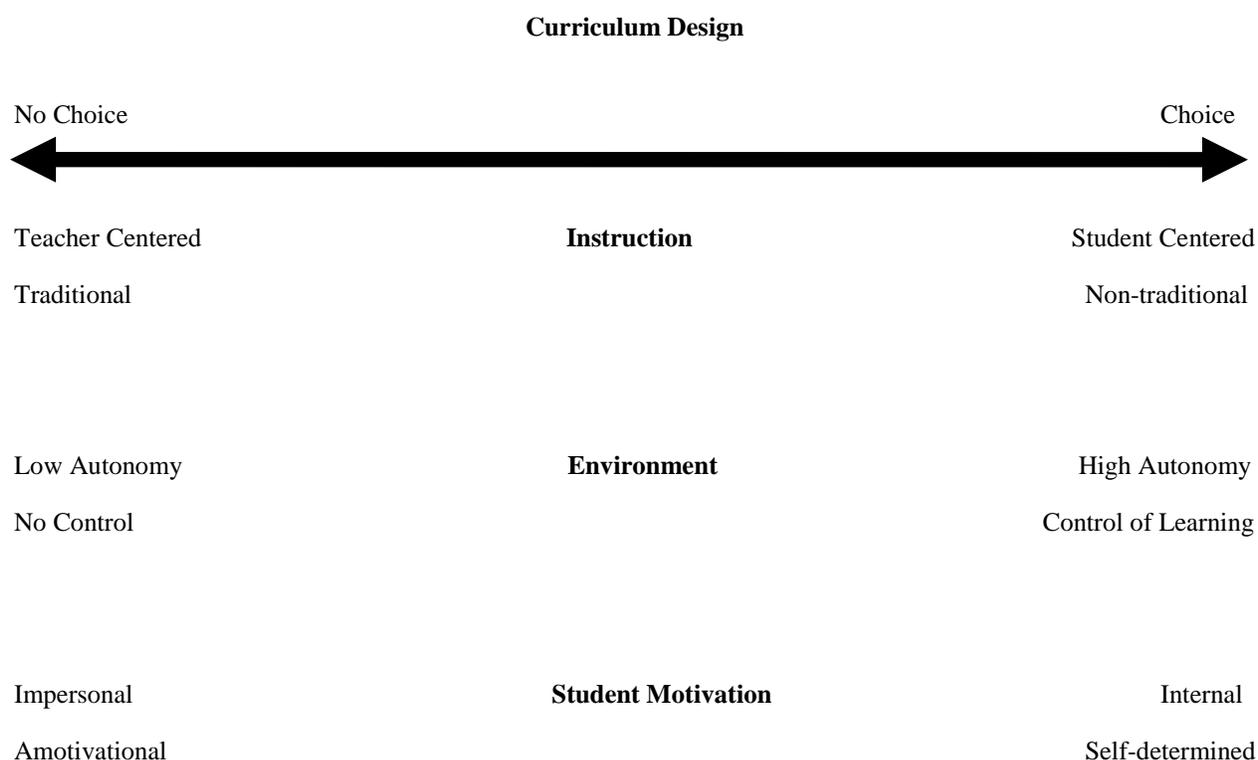


Figure 2. Choice Continuum Model

Hannon and Ratliffe (2007) reported that female students receive more opportunities to participate in PE in single-gender settings as opposed to coeducational settings. Male students were reported to have more opportunities in a coeducational setting versus a single-gender setting. By eliminating male students that may dominate game play, female students gain more opportunities to participate. Females may also feel more confident and self competent in single-gender settings versus a coeducational setting (Hannon & Ratliffe, 2007). As previously mentioned, perceived competence can negatively affect participation in physical education, especially for females. If female students can receive more opportunities to participate in single-

gender settings, they will be able to increase their perceived competence and feel more confident when engaging in physical activity.

Student's physical activity levels decrease dramatically from the transition of elementary school into middle and high school (Bryon & Solmon, 2012). As suggested by figure 2, teacher-centered styles of instruction and curriculum design provide little autonomy for students. Students lose motivation when the same activities are offered year after year. Physical activity choices provide students with options to become self-determined learners and engage in certain physical activities because they want to, not because they are told to.

Graser et al. (2009) and Bryan and Solmon (2012) offered choice, such as activity choice and choice of lesson presentation versus a teacher-centered class that offered no choices. Physical activity level differences were not found to be significant in both studies. Step counts of students were tracked using pedometers. This poses an interesting debate on whether or not using pedometers is an accurate and valid measure of physical activity within a physical education class. According to the pedometer counts, males were found to be significantly more active than females. Again, this may be attributed to the nature of classes that were provided in the studies. Flag football and capture the flag were two of the activities used in the students and are more "male dominated" in nature. It would be interesting to see what the results may have been if a balance of team sports and lifelong activities were offered.

Choice/Self-Determination

Students who perceive that they are in a task-oriented learning environment are more likely to have a positive outlook on physical activity. Autonomy supported environments can

lead to increased self-directed learning. Results show that choices in physical education have a strong effect on student motivation. When choice is presented in a thoughtful manner to students, they feel that they are in control over their learning, as opposed to a more teacher-centered approach. Environments that support autonomy have been found to increase self-determination in students (Halvari et al., 2009; Mauratidis et al., 2011; Pruzak et al., 2004; Ward et al., 2008).

While environments that support autonomy have been shown to increase self-determination, it may not be enough for all students, especially secondary female students. Perceived competence seems to play a critical role in student participation and self-determination as mentioned by Deci and Ryan (2000). Students may not feel physically competent because they lack the fundamental skills needed to participate in a variety of physical activities. Gibbons and Humbert (2008) found that female's value perceived competence as very important in their ability to perform in physical education. Students do not want to feel isolated or embarrassed in physical education, especially in front of their peers. This suggests the importance of the physical educators' role in providing an environment that fosters skill-development to ensure students feel competent in their physical abilities.

Participants in Halvari et al. (2009) were found to have an increase in physical activity levels for both high and low autonomously motivated students. However, student levels physical activity increased even more for students with high perceived competence (Halvari et al., 2009). This further illustrates the importance of perceived competence within the secondary physical education setting. While choice provides autonomy for students, they still need to feel that they can adequately perform their skills in physical education.

Recommendations

Based on the synthesis of this information, providing choice within a physical education curriculum has a positive effect on student's self-determination. As self-determined learners, students will have an internal motivation to be physically active in PE as well as outside of the school setting. There are many reasons why students choose to participate in PE. For some, it is an internal or intrinsic motivation for physical activity. For others, it is more of an impersonal or external motivation, such as needing to pass PE in order to graduate. The physical educator's primary goal should be to provide a supportive and safe physical education environment that promotes autonomy. In doing so, students will learn what activities they enjoy the most and might continue to pursue into adulthood.

Each PE class is different from the next. Many factors can affect how or if choice is presented in a PE curriculum. These include facility space, equipment, class size, number of physical education teachers, and makeup of the class. Several curriculum models were listed during the introduction of this synthesis. Regardless of which model is used, choices of units, activities, and gender grouping are just some of the ways to give ownership. The following recommendations can help provide an autonomy supportive environment:

1. Physical educators should provide surveys to students to gain information on their activity interests, preference of gender makeup, and class structure.
2. PE Teachers should provide a wide range of activities, including lifelong activities, to keep all students engaged.

3. Teachers can allow students to choose levels of intensity while participating by grouping students according to desired level of participation.
4. PE teachers need to work together when planning their curriculum to plan for facility usage and assign teachers to their most proficient content area.

Not all schools can have an elective program or have choice for every lesson. Some physical education programs do not have the facilities to support multiple activities at once. However, with some thoughtful planning and creativity, choice can be successfully included. Student surveys can be used to get feedback on students. The following can be included: activity preference, gender preference (single-gender versus coed), learning style, as well as feedback on how they are motivated in physical education. Based on survey results, physical educators can group students into sections. These sections could vary from unit to unit or continue throughout the school year. This is an excellent way to provide autonomy for very diverse settings. Including a unit where students create their own activities and teaching it to the class is another way to provide autonomy for students. Students who feel that they are in control of their learning are more self-determined than students in teacher-centered environments (Gibbons, 2009).

Future Research

The current critical mass has investigated a variety of topics including self-determination, gender grouping, and activity preferences of secondary students. One finding that seems to be consistent throughout research is that giving choice to students gives them a sense of autonomy in their learning. However, results have not shown a significant difference in physical activity levels between choice and no choice groups. Future research needs to look at physical activity patterns of secondary males and females during traditional and choice units. Pedometers were

used in some studies motoring step counts, which only tracks the amount of movement. Heart rate monitors could be used to monitor intensity of exercise. Time on task could also be used to see if students are able to tolerate certain activities more when they are in control of which activities they choose.

Conclusion

Autonomy can encourage students to become more self-determined learners. Self-determination in physical education is about reshaping class environments to promote active lifestyles independent of size, shape, or abilities (Deci & Ryan, 2000). This link is critical because of the decline in physical activity as students enter high school and into adulthood. The goal of quality physical education programs should be to provide a safe environment for students and to allow students to take ownership of their health and physical activity. A self-determined PE student participates in physical activity because he/she wants to, not because they need credit or to avoid negative attention from a teacher. Choice has been shown to have a positive effect on student's motivation and increases self-determination.

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APPENDIX

Coding Table From Critical Mass

APPENDIX
CODING TABLE FROM CRITICAL MASS

Study	Statement	Subjects	Measures	Findings	Results/Effect
An Analysis of Middle School Students Physical Education Physical Activity Preferences Hill & Hannon, 2008	To determine which physical education activities middle school students would like to have included in the yearly curriculum	881 students 7-9 grade students 491 males 389 females 1 unidentified	Demographic survey	Females preferred non-contact activities (skating, gymnastics, yoga) Males preferred competitive activities (Football, hockey, team handball)	Incorporating more student choice may keep students more fully engaged in lessons Ensure that curriculum is not gender biased
Autonomy Support and its Links to Physical Activity and Competitive Performance Halvari, Ulstad & Bagoien, 2009	To test a self-determination model in relation to involvement in physical activity and competitive performance among students	190 adult students, volunteers	Sport Climate Questionnaire, Self-Regulation Questionnaire, Perceived Competence Scale, Huhls Action Control Scale	Students' perceived competence increases at a higher rate with high autonomy support	To increase physical activity in our young population, autonomy supportive contexts seem to play an important role
High School Females' Perceptions of Selected Fitness Activities Wilkinson & Bretzing, 2011	To answer (1) Which do females prefer, fitness units or sports units and (2) what are the reasons for the females' unit preferences	88 high school females	Questionnaire and field notes	74% preferred fitness units 18% preferred sports units 8% preferred a combination of both fitness and sports units Females found fitness activities easier to learn and prefer the non-competitive lifetime activities	High school physical education teachers need to include fitness activities as options in their high school curriculum which can increase females engagement in physical education class
Are Choice-Making Opportunities Needed in the Classroom? Brooks & Young, 2011	To understand student motivation, learner empowerment, and how freedom in the college classroom shapes students' enthusiasm for learning	419 college students; 17-46 years old 295 female 122 male	Multidimensional Situational Motivation Scale, measured on a 7-point likert scale	Students feel more self-directed in their learning when the class is student-driven (voluntary attendance and assignment choices) or teacher-driven (mandatory attendance and no assignment choices) and not a mix	To maximize student motivation, educators need to be consistent in the choice-making opportunities that they offer their students Students prefer predictability in expectations

Study	Statement	Subjects	Measures	Findings	Results/Effect
Student Motivation in Physical Education and Engagement in Physical Activity Bryan & Solmon, 2012	To investigate student motivation in PE by examining relationships among perceptions of the motivational climate, attitudes, levels of self-determination, and the engagement of physical activity	114 students; 6-8 grade 57 male 57 female	27-item Questionnaire, Situational Motivation Scale, and The Physical Activity Questionnaire for Children	Perception of the PE climate is a stronger influence on students' attitudes than on their levels of self-determination Pedometer counts were higher in males than females due to "male-dominated" activities in their PE curriculum	Physical educators need to offer activities that are appealing to both genders or provide a choice of activities to increase the likelihood of active engagement in physical education classes
Effects of Choice on Student Motivation and Physical Activity Behavior in Physical Education Ward, Wilkinson, Graser, & Prusak, 2008	To examine the effects of increased autonomy on self-determination and physical activity levels	122 students 7 th & 8 th grade females	Pedometer, Situational Intrinsic Motivation Scale, and the Sport Motivation Scale	Autonomy has a positive correlation with self-determination Physical activity levels did not increase due to choice in activities	More research should be done to measure physical activity levels on students that have choose their physical activity over students that do not have choice
The effects of Choice on the Motivation of Adolescent Females in Physical Education Prusak, Treasure, Darst, & Pangrazi 2004	To examine the motivational responses of adolescent females in the P.E. setting to having choices of walking activities	1,110 students 7 th & 8 th grade females	Sport Motivation Scale and a modified Situational Motivation Scale	Providing choices significantly increased the situational motivation and lessened the contextual amotivation of the participants	The challenge is to determine how much choice students should be offered: ranging from total choice to choice within a choice
Field-Dependence-Independence and Physical Activity Engagement Among Middle School Students Liu & Chepyator-Thompson, 2009	To investigate and compare physical activity levels as well as organized sports participation between field-independent (FI) and field-dependent (FD) middle school students	138 middle school students 72 females, 66 males	The Rod-and-Frame Test, Physical Activity Checklist, and a Demographic Survey	FI participants tended to choose activities that were more related to sports (basketball, weightlifting, football) and FD students top activities had less association with sports (walking)	FD students demonstrated much lower physical activity levels and were less engaged in organized sports than the FI students Lifestyle physical activity and other non-competitive activities might be good choices for FD students to enhance their physical activity levels

Study	Statement	Subjects	Measures	Findings	Results/Effect
Garn, Cothran, & Jenkins, 2011	To examine how students view the relationship between individual interest and learning in PE	8 middle school students 4 male 4 female	Formal/informal interviews Field note observations Survey data	Opportunities to participate and perceived competence were the main factors to developing individual interest	Small sided games can create more opportunities and will allow for more skill development to increase perceived competence
Opportunities to Participate and Teacher Interactions in Coed versus Single-Gender Physical Education Settings Hannon & Ratcliffe, 2007	To compare high school aged females and males opportunities to participate and interact with teachers during flag football, soccer, and ultimate Frisbee game play in a coed and single-gender setting	67 high school students 32 male 35 female	A modified version of the Observational Recording Record of Physical Educator's Teaching Behavior and recording sheets	Female students in single-gender physical education settings may receive more opportunities to participate as well as receive more teacher interaction	Some units may provide more opportunities for males and females to be engaged in activity if single-gender Teacher can provide choices of coed or single-gender classes to provide students with more opportunities to participate and engage in physical activity
What are Middle-School Females Looking for in Physical Education? Gibbons & Humbert, 2008	To identify physical activity preferences and patterns of middle-school females and identify barriers toward participation in PE	90 females 6/7 grade	Focus group interviews One-on-one interviews Written questionnaires	4 themes were found: 1) Variety and choice for a lifetime 2) Perceived competence 3) A healthy body is a moving body 4) Emerging sense of gender equity	For female students to have positive experiences in PE, they must have a safe environment and valued by both the teacher and students and allowed to participate in meaningful physical activities
Meaningful Participation of Females in Senior Physical Education Courses Gibbons, 2009	To examine course materials and gather information from teachers and students from senior elective PE courses	22 school districts in British Columbia	Document analysis Individual interviews Written Questionnaires	6 themes emerged: 1) Focus on lifetime activities 2) Value-added options 3) Student involvement in course development 4) Gender as a course design feature 5) Authentic assessment 6) Positive and respectful class environment	Incorporating student input seems essential to the design of a successful PE course Focus on lifetime physical activities was the most common theme found

Study	Statement	Subjects	Measures	Findings	Results/Effect
<p>On the assessment of situational intrinsic and extrinsic motivation: The Situational Motivation Scale (SIMS)</p> <p>Guay, Vallerand, & Blanchard, 2000</p>	<p>To develop and validate a situational (or state) measure of motivation, the Situational Motivation Scale (SIMS)</p>	<p>Multiple studies</p>	<p>Situation measures – Perceived competence</p> <p>Academic Motivation Scale</p>	<p>Students who, in general, perform their school activities out of choice and pleasure will also show a tendency to perform a situational school activity with these same motivational processes</p>	<p>Results of the studies provided preliminary support for some of the psychometric properties of the SIMS</p>
<p>Carroll & Loumidis, 2000</p>	<p>To examine the relationship of children's perceived competence in physical education to their enjoyment in the subject, and how males and females scoring high and low in enjoyment and perceived competence differed in their levels of physical activity</p>	<p>922 sixth grade students</p>	<p>Questionnaires</p>	<p>Moderate positive and significant relationships between enjoyment in PE and perceived competence in PE for the whole sample</p>	<p>Children of high perceived competence participated in significantly more physical activity (quantity and intensity) outside school than those of low perceived competence, but there was no difference in enjoyment levels and quantity of physical activity</p>