

AN EMPIRICAL STUDY OF CHILDREN'S ENJOYMENT AND PERCEIVED
COMPETENCE IN PHYSICAL EDUCATION AND ITS EFFECTS ON THEIR
PHYSICAL ACTIVITY PARTICIPATION OUTSIDE OF SCHOOL

by

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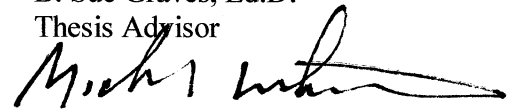
This thesis was prepared under the direction of the candidate's thesis advisor, Dr. Sue Graves, Department of Exercise Science and Health Promotion, and has been approved by the members of his supervisory committee. It will be submitted to the faculty of the College of Education and has been accepted in partial fulfillment of the requirements for the degree of Master of Science.

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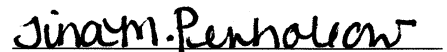


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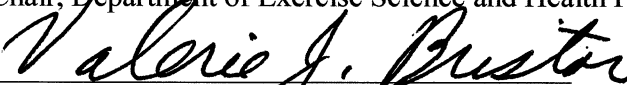


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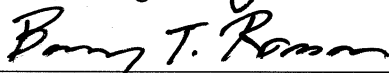
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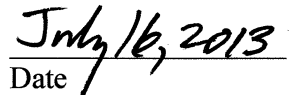
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ABSTRACT

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The purpose of this study was to explore the relationship between children's enjoyment and perceived competence in physical education (PE) and the effects these factors may have on physical activity participation outside of school. Fifth through eighth grade ($n = 100$) school children completed questionnaires pertaining to their enjoyment in PE, perceived competence in PE, and physical activity participation outside of school. Results indicated a positive significant relationship between enjoyment in PE, and perceived competence in PE ($p < 0.01$). Children with higher perceptions of competence in school PE, reported greater physical activity participation outside of the school environment ($p < 0.002$). Enjoyment in PE had no statistical significance in determining physical activity participation outside of school ($p > 0.05$). Understanding the factors which influence physical activity participation can help inform future policies and

strategies aimed at providing developmentally appropriate experiences, ultimately providing intrinsic motivation to seek out, and sustain, regular physical activity participation.

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CHAPTER I: INTRODUCTION

Physical education (PE) is a subject where sport and physical activity are presented to children of all ages and abilities. PE has been widely acknowledged as a fundamental field for promoting children's physical activity participation, with the potential to contribute towards public health by encouraging lifelong physical activity habits (Cairney et al., 2012; Fairclough, 2003; Goudas, Biddle, & Fox, 1994; Sallis & McKenzie, 1991). Past studies and government publications have drawn attention towards alarming figures representing the lack of time children spend participating in physical activity (Carroll & Loumidis, 2001; Centers for Disease Control and Prevention (CDC) 2012b; Coulter & Woods, 2011; Sollerhed, Apitzsch, Rastam, & Ejlertsson, 2008). Consequentially, widespread concern exists regarding long-term public health as these sedentary lifestyles contribute towards obesity statistics, with a third of adults and 17% of children falling into this weight category (CDC, 2012b). PE, when implemented correctly, has shown to contribute towards tackling obesity by ensuring children remain physically active, both when they participate at school and pursue further activity during leisure time (Carroll & Loumidis, 2001).

In order to meet the guidelines set by the National Association for Sport and Physical Education (NASPE, 2004), children should participate in moderate to vigorous physical activity (MVPA) for at least one hour on most days of the week, at the

minimum, no less than three days (Coulter & Woods, 2011; Graham, 2008; United States Department of Health and Human Services (USDHHS), 2008).

In addition to these recommendations, research has shown the physical, cognitive and socio-emotional benefits one can gain from participating in regular physical activity (Barr-Anderson et al., 2008; NASPE, 2004). Therefore, value can be appreciated by investigating children's motives to participate in physical activity.

In recent years, a growing interest has developed into the psychological factors that can influence a child's motives to participate in physical activity, with the majority of the research identifying the potential positive experiences in PE have in promoting physical activity participation (Papaioannou, Bebetos, Theodorakis, Christodoulidis, & Kouli, 2006; Sollerhed et al., 2008; Wang, Chatzisarantis, Spray, & Biddle, 2002). Findings revealed children's own perceptions of competence and enjoyment levels in this subject were strong indicators of their desire to seek out and sustain further participation in physical activity. However, in the past decade or so, very few studies have looked at the distinct relationship of such psychological factors in school PE, and how it plays a part in children's physical activity participation habits, specifically outside of school. Interestingly, previous findings revealed that children's own perceptions of competence and enjoyment levels in this subject were strong indicators of their desire to seek out and sustain further participation in physical activity (Carroll & Loumidis, 2001; Fox, 1988; Sallis & McKenzie, 1991). Recently, a lot of importance has been placed on PE cultivating an enjoyable, positive and achievement-orientated environment (Barr-Anderson et al., 2008; Cairney et al., 2012; Coulter & Woods, 2011; Graham, 2008). If

implemented, a child may be more likely to seek out and sustain further physical activity for future feelings of competence, enjoyment and success (Goudas & Biddle, 1993; Klint & Weiss, 1987).

Evidently, further investigation is required into the nature of these significant psychological factors in PE (enjoyment and perceived competence), more specifically, the extent to which these factors affect children's physical activity participation habits outside of school.

Hypothesis

The central hypothesis of this study was children with high enjoyment, and high perceived competence in school PE, would be significantly ($p < 0.05$) more active outside of school in individual and team activities than, those with low enjoyment and low perceived competence in school PE.

In addition, further hypotheses were those who reported high enjoyment in PE will have significantly higher perceptions of competence in PE ($p < 0.05$), and a greater portion of children with high enjoyment and high perceived competence in school PE reach the recommended weekly levels of physical activity than those with low enjoyment and low perceived competence in school PE. Also, boys would report higher activity levels than girls outside of school, and would have significantly higher enjoyment and higher perceived competence levels in school PE than girls ($p < 0.05$). Lastly, those children who have lower BMI's, would report significantly higher levels of enjoyment in PE, higher perceptions of competence in PE, and spend more time participating in

physical activity outside of school, in comparison to their higher scoring counterparts on the BMI ($p < 0.05$).

CHAPTER II: LITERATURE REVIEW

Understanding the motives behind why children choose to participate in physical activity has been cited as an important issue for educators, coaches and researchers (Klint & Weiss, 1987). Yet research has recognized that children's motivation for participation in physical activity remains understudied in exercise and sport literature (Goudas et al., 1994). PE can be seen as a crucial domain for promoting children's physical activity participation with it having the potential to encourage children to reach physical activity guidelines published by the USDHHS (2008). In recent years, physical inactivity in children has been recognized as a major public health problem (CDC, 2012b; Sollerhed et al., 2008). PE has often shouldered the blame. The current obesity epidemic could be viewed as a costly sidetrack for the profession, as educators and professionals in the field shoulder the responsibility to get the nation's youth active, resultantly depreciating the quality of the programs proposed by NASPE (2004). Barr-Anderson et al. (2008) conveys the view of many that PE can impact long term health. Inevitably, children can be exposed to above and beyond two hours a week of quality PE at a young age, therefore, PE plays an important role in shaping an individual's perceptions on physical activity in general.

These public health concerns have led to an increased interest, both past and present, into the psychological determinants of children's physical activity participation (Cairney et al., 2012; Carroll & Loumidis, 2001; Williams & Gill, 1995). Two psychological determinants, which have received a great deal of attention, are enjoyment and perceived competence (Coulter & Woods, 2011; Goudas & Biddle, 1993; Roberts, Kleiber, & Duda, 1981). An examination of such psychological factors within the PE arena is pertinent in order to generate an understanding and awareness for professionals in the field of the potential relationship these have on physical activity participation, in addition, raising awareness of the fundamental role educator's play in shaping these factors through appropriate PE experiences.

Past research into psychological determinants of children's physical activity participation has often been centered on the domains of organized sports, sports clubs or competitive athletes (Brustad & Weiss, 1987; Gill, Gross, & Huddleston, 1985; McAuley, Duncan, & Tammen, 1989). Consequently, this specific research field has led to previous research focusing on the minority of individuals involved in sports clubs as opposed to individuals participating in recreational activities at varying levels. The relationships between factors including perceived competence and enjoyment in PE have been studied both within the United States of America (USA) and abroad (Cairney et al., 2012; Carroll & Loumidis, 2001; Papaioannou et al., 2006). In addition to studying the relationships between psychological factors and various levels of participation in physical activity, other research has studied the older adolescent age bracket in which findings uncovered traits including participants becoming less active with age (Sollerhed et al.,

2008), a trend acknowledged by the work of Coulter and Woods (2011). In addition, only a handful of studies have shown support towards the relationship of PE and physical activity participation outside school (Carroll & Loumidis, 2001; Sallis & McKenzie, 1991). Conversely, studies have revealed a self-image of being physically incompetent within the PE domain has somewhat a negative impact on pursuing further physical activity participation, an extremely noteworthy implication for professionals in the field (Fairclough, 2003; Fox, 1988). Evidently, not enough research exists on how positive or negative experiences in PE can alter a young child's motivation to continue and sustain physical activity outside of school, and perhaps shape future physical activity habits. Conducting research in this field will not only bring to light any such relationship, but raise awareness to educators of the significance of implementing developmentally appropriate, nurturing, and challenging environments, encompassed through an inclusive approach.

Enjoyment

Previous studies have acknowledged the experience of enjoyment as a critical factor towards motivating young individuals to continue participating in activity environments (Cairney et al., 2012; Goudas & Biddle, 1993; Weiss, 1987). Supplementary research carried out by Ferrer-Caja and Weiss (2000) clarified that enjoyment and interest in exercise settings are linked inherently to intrinsic motivation. Several authors have underpinned the need for PE professionals to understand intrinsic motivation and how increasing efforts to enhance this internal factor in their teaching practice can breed long-term motivation and continued participation (Cairney et al., 2012;

Carroll & Loumidis, 2001; Prochaska, Sallis, Slymen, & McKenzie, 2003). Additional work in the PE field has also recognized the relationship between enjoyment and ability (Barr-Anderson et al., 2008; Goudas & Biddle, 1993). Children experience enjoyment and motivation from demonstrations of competence or when a task they are involved in is comparable to their level of perceived ability (Fairclough, 2003; Graham, 2008). Research regarding these psychological factors found a positive and significant link between enjoyment and perceived ability, with results concluding that those who found PE to be enjoyable also confirmed high perceptions of their own competence in the subject (Carroll & Loumidis, 2001; Fairclough, 2003).

A handful of studies (Coutler & Woods, 2011; Dismore & Bailey, 2011; Kremer, Trew, & Ogle, 1997; Laws & Fisher, 1999) explored children's involvement and perceptions of sport and PE, concluding the majority of positive experiences were derived from feelings of enjoyment. More specifically, research has acknowledged children's enjoyment in PE stemmed largely from the curriculum content, where appropriateness of the challenge translated to an element of fun for the individual (Dismore & Bailey, 2011; Goudas & Biddle, 1993). Necessarily, educators and future professionals in the PE domain need to seriously consider the implications that curriculum could be having on such psychological determinants like enjoyment, and realize the effects curriculum content may have on an individual's motivation to be involved in physical activity.

As stated previously, research has also revealed that enjoyment is closely linked with intrinsic motivation, which can lead to further participation and desire to seek out

additional challenges (Deci & Ryan, 1985). Careful consideration, flexibility and understanding are required by educators when planning and implementing a curriculum. Meganck et al. (2003) reported boys' and girls' enjoyment is heightened by team games and individual activities respectively, bringing into question the current state of affairs concerning the PE curriculum in the majority of schools across the United States of America (USA). Perhaps an over-reliance is placed on team games, while the innate psychosocial qualities are undeniable, a question must be asked about the level of participation one receives from team games. Research that lends a hand to this debate has shown how girls typically possess lower levels of enjoyment and participation in PE, attributable to low levels of perceived competence through inappropriate experiences (Barr-Anderson et al., 2008; Cairney et al., 2012; Carroll & Loumidis, 2001; Luke & Sinclair, 1991; Meganck et al., 2003). In summary, environments where individuals feel uncomfortable, embarrassed or awkward in front of their peers can have a negative effect on enjoyment towards the subject of PE (Barr-Anderson et al., 2008; Goudas & Biddle, 1993). As a result, 'amotivated' behavior can occur, where the individual has no desire whatsoever to continue with, or seek out further challenges in this field and ultimately levels of enjoyment and motivation drop (Fairclough & Stratton, 2005; Feltz & Petlichkoff, 1983).

Conclusively, enjoyable PE experiences are believed to be essential for developing and sustaining children's intrinsic motivation inevitably enhancing current and future participation in physical activity. The previous research indicates enjoyment stems from intrinsic motivation and enjoyment is increased by being able to demonstrate

competence (Cairney et al., 2012; Graham, 2008). Creating a setting where an individual is appropriately challenged, and can demonstrate competence, subsequently contributes to continued participation by the individual in this environment or similar fields, such as pursuing physical activity opportunities in their leisure time (Klint & Weiss, 1987; Roberts et al., 1981).

Perceived Competence

Perceived competence refers to one's beliefs about his or her ability in an achievement domain (Fairclough, 2003). These beliefs or perceptions are constructed by information obtained from the environment (e.g. teacher feedback) and significant others (e.g. peer comparisons). Several motivational theories have been empirically tested regarding individuals' perceptions of themselves; however, the most significant one of late is Harter's competence motivation theory (1978). The theory suggests an individual needs to satisfy the urge to be competent through mastery. With successful attempts comes positive experience, enhancing perceived competence, intrinsic motivation and the desire to remain involved (Klint & Weiss, 1987; p. 56). Reconfirming Harter's (1978) theory, recent research supports the firm belief pertaining to an educator's duty of providing a motivational, mastery environment, enhancing skill development but also perceived competence (Cairney et al., 2012; Standage, Duda, & Ntoumanis, 2003; Weiss, Ebbeck, & Horn, 1997; Williams & Gill, 1995).

Other motivational theories regarding perceived competence require attention, too. Cognitive Evaluation Theory (Deci & Ryan, 1985) argues how motivation differs

depending on changes in perceptions of competence. Specifically, the relationship between perceived competence and effort is mediated by intrinsic motivation or by the individual's inclination to engage in a challenging task (Ferrer-Caja & Weiss, 2000; Williams & Gill, 1995). The demonstration of competence in achievement settings including PE classes is known as Achievement Motivation Theory (Nicholls, 1984). In this theory, success is judged by whether or not an individual perceives themselves to have shown competence. Negative feelings, such as failure, are present if an individual feels they have not displayed suitable ability. Conversely, feelings of positivity are present, if the individual feels they have demonstrated competence in a particular setting. Graham (2008) recognizes the sensitivity of such an environment by acknowledging failure, or a belief one has not displayed competence, can lead to discontinued participation. Conversely, Dismore and Bailey (2011) recognize as children become older their enjoyment is fulfilled through learning challenges and opportunities to demonstrate competence.

Another theory with a differing stipulation standpoint is the Goal Perspective Approach (Nicholls, 1984). The theory deduces how individuals show competence through one of two goal orientations. Under a task goal orientation, ability is regarded in terms of learning, improvement and effort, leading to greater mastery and achievement. Thus, success and ability are self-referenced. The other orientation is an ego goal orientation. This premise is based on how an individual performs favorably in comparison to others. Nicholls (1984) concludes in this latter approach, success and

ability are norm referenced, meaning performances are judged against others in the group.

A great deal of the literature suggests a task goal-orientated, mastery environment is best suited for improving competence, motivation, and, therefore, participation levels in sport and exercise domains, such as PE (Fairclough & Stratton, 2005; Klint & Weiss, 1987; Papaioannou et al., 2006). Papaioannou et al. (2006), in a longitudinal study, investigated perceived competence, intrinsic motivation and task orientation in relation to sport and exercise involvement. The findings concluded the three factors in PE are strong determinants of participation in sport and exercise, with a large amount of the participants in the study reported as being 'highly task-orientated' (pg.380). Fairclough and Stratton (2005) conducted an intervention to increase physical activity levels of sixty young adolescent females. The intervention produced similar findings to other research which discovered girls prefer the use of self-comparison information to judge their abilities (Weiss et al., 1997), whereas boys were more likely to use peer comparison when forming judgments of their abilities (Fairclough, 2003). Further findings from the intervention indicated the significance of perceived competence and intrinsic motivation to positive attitudes and persistence in physical activity by girls. Both studies urged the need for educators to deliver lessons in a stimulating manner which cultivates goal orientations, for both sexes. By doing so, individuals can experience achievement, building perceived competence and intrinsic motivation, which ultimately leads them to continue participation and pursue future experiences (Klint & Weiss, 1987).

Harter (1978) suggested the quality of the experience is a critical determinant for the development of perceived competence, a belief mirrored in the aims and objectives of a recent NASPE publication (2004), stating several necessary components of quality physical education (QPE). Dismore and Bailey (2011) illustrated the importance of implementing meaningful and sophisticated practical experiences to provide the individual with a learning challenge and a sense of accomplishment. As mentioned previously, as children grow older they find enjoyment in these multi-faceted approaches. For this reason, the significance is worth noting between enjoyment in PE, and perceived competence in PE (Cairney et al., 2012; Carroll & Loumidis, 2001). In support of the argument, when perceived competence is experienced within self-referenced terms (i.e., a task goal orientation), it predicts intrinsic motivation which in turn can mediate feelings of enjoyment. These positive feelings associated with PE are likely to be the best determinant of intention to be physically active and physical educators should look to provide enjoyable experiences underpinned by tasks challenging students at the appropriate level (Goudas & Biddle, 1983; Graham, 2008).

Studies examined the relationship between perceived competence and enjoyment in physical activity experiences found perceived competence usually influences interest and enjoyment (Williams & Gill, 1995). Interestingly, Luke and Sinclair (1991) explored the relationship between these two variables of perceived competence and enjoyment specifically within the PE domain and revealed perceived competence in PE is a more powerful indicator of children's selection of PE than enjoyment in the subject. Graham (2008) signified the importance of this relationship by describing how a lack of success

and poorly skilled children often choose not to participate. If this is the case, then further information about the relationship of perceived competence and enjoyment in PE and its impact on physical activity participation outside the confines of structured PE would prove useful. Cairney et al. (2012) implored the need for educators and professionals alike to create an environment where feelings of competence can blossom through developing learned skills, which have some translation in to many physical activity environments out with school. Being mindful of such practices helps generate a fundamental awareness of the implications, such psychological factors have on a young person's physical activity habits, giving some backbone to an educators' role within this field and underpinning the importance of constructing an appropriate teaching environment (Barr-Anderson et al., 2008; Fairclough & Stratton, 2005; Goudas & Biddle, 1993; Standage et al., 2003).

Physical Activity

Several studies have recognized the relationship between high levels of perceived physical competence and an individual pursuing physical activity thereafter (Cairney et al., 2012; Carroll & Loumidis, 2001; Fairclough, 2003; Roberts et al., 1981). Other findings also display consistencies, such as boys being more active than girls and the reduction of activity levels with age (Barr-Anderson et al., 2008; CDC, 2011; Goudas et al., 1994; Williams & Gill, 1995). The CDC (2011) reported 29% of high school students met the recommended levels of physical activity prior to the survey and only 31% attending PE classes daily. Alarmingly, males (38.7%) reported being physically active for more than 60 minutes per day whereas females (18.5%) reported much lower

numbers. A similar trend was seen for attendance of PE classes with males (34.6%) attending PE classes more regularly than females (27.2%).

In a national representative survey conducted by the CDC in 2002, statistics showed approximately 75% of children between 9-13 years of age reported participating in free-time physical activity in the previous seven days. This drastic decrease of 75% to 29% from childhood to adolescence is clear evidence of how physical activity levels are declining with age, a trend recognized by Coulter and Woods (2011).

Failing to meet recommended levels has serious implications. Physical activity can provide a number of benefits, such as preventing diabetes, obesity and other chronic diseases, reducing the risk of stress, helping with academic performance and improving overall quality of life (Kwak et al., 2009; NASPE, 2004). The USDHHS (2008) recommended children between 6-17 years of age should be active for at least 60 minutes every day, partaking in moderate to vigorous aerobic exercise, otherwise documented as exercise which elevates the heart rate to a high level or causes the individual to breathe heavy some of the time (CDC, 2011).

As noted in earlier sections of this review of literature, numerous studies have examined participation levels in physical activity outside of educational institutions in structured settings, such as sports clubs and organizations (Raudsepp, Liblik, & Hannus, 2002; Stein, Fisher, Berkey, & Colditz, 2007). The findings evidently confirm sport participants have higher levels of perceived competence and intrinsic motivation than non-participants or dropouts (Feltz & Petlichkoff, 1983). Additional findings have

revealed increased intensities of physical activity can positively impact perceptions of competence in boys and girls (Meganck et al., 2003), thus a need to explore the relationship between differing intensities of physical activity and perceived competence in PE, as some statistical significance between the two contexts (inside and outside of school), may exist. In consideration of past findings, it is worth noting only the boys displayed a positive and significant relationship between the levels of intensity of physical activity and perceived competence (Stein et al., 2007). Moreover, girls tended to be less physically active than boys (Wang et al., 2002), which may explain the consistent results of boys having greater positive perceptions of their physical competence than girls (Cairney et al., 2012; Carroll & Loumidis, 2001; Ridgers, Fazey, & Fairclough, 2007).

A great deal has been written in the literature on the evident decline in the physical activity levels of girls as they get older (Barr-Anderson et al., 2008; Williams & Gill, 1995; Raudsepp et al., 2002). Other research found similar results concerning age trends, although for both genders not just females. Papaioannou et al. (2006) discovered boys' and girls' levels of motivation, perceived competence and physical activity declined with age. These relationships were in accordance with other studies (Coulter & Woods, 2011; Goudas et al., 1994; Sollerhed et al., 2008) and have been theoretically underpinned by the belief that older adolescents are more likely to consider 'ability' as a fixed entity. Feltz and Petlichkoff (1983) explain this belief is typical of older adolescents who have low levels of perceived competence and who have had several unsuccessful experiences in a particular context (e.g., physical education). Their research found length of involvement in an activity can be a detrimental factor in individuals' levels of

perceived competence, with those who have participated for longer in an activity having higher levels of perceived competence than those who have not. In lieu of these findings, the pertinent roles educators have in providing motivational and stimulating experiences are once again evident, with future participation at risk of becoming extinct due to unsuccessful experiences (Feltz & Petlichkoff, 1983).

A handful of empirical studies have explored other variables that may influence physical activity participation, such as parental influence and differing lifestyles among young children (Bois, Sarrazin, Brustad, Trouilloud, & Cury, 2005; Coulter & Woods, 2011; Telama, Nupponen, & Pieron, 2005). Research revealed the relationship between parental behavior in terms of being a role model, providing the necessary support, and the significant effect this had on the amount of time a young child spent being physically active. Interestingly, parents beliefs about their child's physical competence was strongly associated with a child's own perceived competence, (Bois et al., 2005) which various other studies have confirmed, can contribute to a child's level of physical activity (Klint & Weiss 1987; Sollerhed et al., 2008; Stein et al., 2007). Sallis, Prochaska, and Tylor (2000) sought to understand the other factors influencing physical activity in order to aid more effective interventions. Their research revealed over twenty variables (e.g., parental overweight status, program/facility access) were consistently associated with children's physical activity, and a high proportion of this cluster of variables could be grouped under lifestyles. Telama et al. (2005) established those, who were only interested in sedentary lifestyles (e.g. computer games, watching TV), were the most inactive and displayed lower levels of perceived competence. In agreement, Coulter and Woods

(2011) acknowledged physical activities children participate in must be fun and appealing in order to compete with these unhealthy sedentary activities which tend to be commonplace in every household. Furthermore, it is pertinent to understand how children from a young age do not view health as a reason to participate in physical activity, thus the need for an enjoyable and appealing experience for continued participation (Coulter & Woods, 2011). Other research also confirmed children, who are involved in physical activity at the bare minimum levels (family, leisure, informal), had lower intrinsic motivation and levels of perceived competence (Telama, 1998), which is in accordance with other research surrounding physical activity levels (Brustad & Weiss, 1987; Carroll & Loumidis, 2001; Fairclough, 2003).

The consequences of a sedentary lifestyle are represented by the current statistics showing over a third of adults, and close to one-in-five children, are obese, as classified by the Body Mass Index (BMI) ($BMI \geq 30$). Furthermore, the costs of this fourth leading risk factor for global mortality go far beyond health concerns, with a reported \$147 billion spent in 2008 on obesity related medical costs (CDC, 2012b). Various studies have explored the relationship between BMI and the factors of enjoyment, perceived competence and self-esteem in children (Barr-Anderson et al., 2008; Fairclough, Hilland, Stratton, & Ridgers, 2012; Hesketh, Wake, & Waters, 2004; Ishee, 2003). In their study where two hundred subjects had their BMI calculated, Fairclough et al. (2012) acknowledged those who reported low levels of perceived competence in PE had higher BMI's than their counterparts. In accordance with these findings, Hesketh et al. (2004) displayed results with strong associations between low self-esteem and high BMI's in

over one thousand children aged between five and ten years old. Previous research has drawn on the powerful effect demonstrations of competence can have on improving self-esteem, so a lack of opportunities to demonstrate such competence, for example in PE, can have adverse effects on the child (Nicholls, 1984). Investigation of enjoyment in PE and how this may be linked to a child's BMI has shown an inverse relationship between the two components. Those, who report low levels of enjoyment in PE, have higher recorded BMI's (Barr-Anderson et al., 2008; Ishee, 2003).

Evidently, from the plethora of research examining the relationships between these psychological factors of enjoyment and perceived competence in PE, along with the apparent urgency illustrated by statistics showing the undesirable physical activity patterns of USA's child population, further research is required in the field to examine how these two domains are related. The implications of how appropriate developmental experiences in school PE can affect physical activity habits of children are very serious in terms of health and well-being. Recognition of such a relationship may lead educators and professionals in the field to seriously consider their teaching practice and the environment presented to children through nationwide educational institutions.

CHAPTER III: METHODS

For this study, quantitative research methods were used to gather information on children's' enjoyment and perceived competence in physical education, and physical activity participation out of school. A quantitative approach places an emphasis on revealing facts and relationships that can be extended to the social world. In a bid to legitimize or negate research hypotheses, educational research can establish these connections through the use of quantitative research methods, with the hope of being able to explain and govern the reality which is being observed (Cohen, Marion, & Morrison, 2001).

In order to collect such empirical data, past studies have used nomothetic data gathering methods in the form of self-report tools (e.g. questionnaires), although questions of validity and reliability arise around using such objective measures (Burgess, 1985; Cohen et al., 2001). Moreover, the purely quantitative nature of this study and any relationships identified between comparable studies can give validity not only to this research, but to this specific context for future educational research.

Participants

The research sample consisted of 108 5th to 8th grade boys (n=53) and girls (n=55) from a public school in Boca Raton, FL. The school followed the state guidelines in

terms of PE curriculum where the students were exposed to team and individual activities throughout the school year. The PE teachers' gender or specialist field had no bearing on who they instructed (e.g. boys or girls) and classes were mixed ability and mixed sex. Fifth grade students received PE classes once every three days for 50 minutes per session, equating to approximately 300 minutes per month/75 minutes per week of PE. Sixth, seventh, and eighth grade students received PE every day for 50 minutes per session, equating to approximately 1000 minutes per month/250 minutes per week of PE. Although seventh grade students only had this rotation for half the school year, they may elect to take extra PE classes.

Materials

One self-report questionnaire (Appendix C/D) split in to three sections, was utilized measuring enjoyment of PE, perceptions of competence in PE and physical activity participation out with the school PE curriculum. Height was recorded using a wall, measuring tape, and a level. For weight measurement, a 'Health-o-Meter' scale was used. The scale was calibrated using two standard 22lb weights by the researcher. Pencils and erasers were provided by the researcher for completion of the questionnaire.

Consent

Prior to completion of the questionnaire, a letter of consent for each student was sent home and returned, signed by his or her parent/legal guardian allowing the child to participate in this study (Appendix A). Additionally, a child assent form was completed by the student prior to participation in the protocol (Appendix B). Incomplete consent

forms were not accepted, and any clarification needed understanding the child assent form was given, and noted accordingly on the form.

The questionnaire was administered by the researcher in a classroom setting. The children were not requested to give their names, only their grade, sex, and date of birth. Height and weight was measured and recorded after the questionnaire had been completed. Responses remained anonymous and confidential.

Intrinsic Motivation Inventory (IMI)

For enjoyment and perceived competence in PE, the ‘Interest/Enjoyment’ and ‘Perceived Competence’ sections of the Intrinsic Motivation Inventory (IMI) (Ryan, 1982) were employed to identify participants’ levels of enjoyment and self-perceived competence in PE (Appendix C). McAuley et al. (1989) conducted a study that examined the legitimacy of the IMI. Reliabilities of these scales were determined by coefficient alpha (α) and the internal consistencies were deemed adequate in terms of reliability for interest/enjoyment ($\alpha=.78$) and perceived competence ($\alpha=.80$). Participants responded to five statements (e.g. I enjoy PE very much) on a four-point Likert scale, ranging from ‘not at all true’ (1) to ‘very true’ (4) for each statement. Similar protocol was followed for perceived competence, with five items relating to the participants perceptions of ability in PE, their ability to learn sport skills in PE and their confidence in the PE environment. Similarly, answers were noted on a four-point Likert scale, ranging from ‘not at all true’ (1) to ‘very true’ (4).

Physical Activity Assessment

To measure physical activity participation out with school, section three of the questionnaire (Appendix D) asked four questions relating to the child's physical activity participation habits outside of school hours, relating to duration, frequency, intensity and type of activity. Similar methods have been followed with children of comparable ages, successfully measuring physical activity participation and exertions (Carroll & Loumidis, 2001; Riddoch, Murphy, & Nicholl, 1990).

For this section, the students were asked to indicate: 1) how many times in the previous week they had participated in physical activity outside of school, 2) the amount of time spent on each activity and 3) the type of activity they participated in. Students were asked to exclude all school PE activity from this assessment and to only record any type of activity outside of school hours, either organized or informal. Activities were grouped into either team, where they participated with other required members (e.g. basketball), or individual, where the activity did not depend on others taking part (e.g. swimming). A fourth question assessed to what extent they had exerted themselves in each episode of physical activity outside of school in the previous week. Students were asked whether in each occasion they had become out of breath, sweaty or tired, commonly known as their perceived exertion. This was important to the research as this measure is recommended as a truthful assessment of the comparative stress placed on the body when more objective measures (e.g. heart rate monitors) are not available (Carroll & Loumidis, 2001; Papaioannou et al., 2006).

Procedures

Participants were issued with a child assent form to complete before beginning the protocol. Pencils and erasers were issued to complete this form, and the forthcoming questionnaire. Before beginning the whole protocol, the investigator clarified what each section of the questionnaire was asking, reviewed the basic ensuing procedure, and impartially helped with any queries or difficulties that arose throughout.

Each participant was given a copy of the questionnaire. They were required to sit alone, circle on the questionnaire their sex and current school grade, and complete the questionnaire as truthfully as possibly.

The questionnaire was completed under exam conditions with a member of the school staff invigilating during this procedure. Upon completion, the child handed their questionnaire to the researcher for review. The researcher asked them for their date of birth, which was noted on the questionnaire in the 'Investigator Use Only' section.

The participant was asked to remove their shoes, and using a measuring tape and level, height was recorded by the researcher to the nearest quarter of an inch, with the child's back to the wall. For weight measurement, the child stepped on a calibrated 'Health-o-Meter' scale, and in the anatomical position, the weight will be recorded to the nearest quarter of a pound (lb.). These measurements were written on the child's questionnaire by the researcher in the 'Investigator Use Only' section. This procedure was performed under school staff supervision in a private area from the rest of the participants.

Analysis

Following completion of the questionnaires, mean values and standard deviations for enjoyment and perceived competence were generated for analyses. For both variables, if the participants mean score fell below the mean of the collective group in question (e.g. boys, girls, activity type), then they were recorded as having low enjoyment/perceived competence. Similar procedures were used for participants scoring above the mean of the group, recognizing that these individuals possessed high enjoyment/perceived competence.

For physical activity, the pupils were grouped according to the level of physical activity they participated in outside of school in the previous week. In alignment with the recommendations for children's health (Coulter & Woods, 2011, Graham, 2008; USDHHS, 2008), students were divided into groups of 'High activity', for those who reach the recommended levels per week, and 'Low activity' for those who fell below this benchmark. The guidelines proposed by NASPE, CDC, and USDHHS, recommend children to be active in MVPA for an hour every day of the week. This would equate to over 400 minutes of physical activity per week. To allocate for the time children spend being active in school (e.g. during PE, recess/lunch), the benchmark of 300 minutes for out of school physical activity was used. Following this protocol enabled the research to gather data on both sexes' out of school physical activity habits, but also allow the findings to be further differentiated between differing types of activity. Accordingly, investigating these avenues added more depth to the research when examining the

relationship between children's enjoyment and perceived competence values in physical education to various physical activity outlets such as team and individual based activities.

BMI was calculated using the BMI Percentile Calculator for Children and Teens (CDC, 2012a) (Appendix E), with the results attributing the child to a specific category (Underweight, Healthy Weight, Overweight, Obese).

Descriptive statistics and an analysis of the means will be investigated to find any relationship between enjoyment and time spent participating in physical activity, sex, type of activity, BMI. Similar analyses procedures were followed for perceived competence. Additionally, descriptive statistics were used to determine any trends in physical activity patterns with increasing school grade, and how perceived competence and enjoyment fluctuate from fifth through eighth grade.

A Pearson product moment correlation was employed to determine the relationship between enjoyment in PE and perceived competence in PE. A stepwise multiple regression analysis was conducted to see whether the independent variables of enjoyment, perceived competence, BMI, or sex, had any bearing on the amount of time spent participating in physical activity outside of school. Additional multiple regressions were computed to look at these aforementioned variables with regards to time spent participating in team-orientated physical activities or individual-orientated activities.

Sex differences, if any, between enjoyment and perceived competence were examined using independent-samples t-tests. Chi-squares were employed to look at any relationships between BMI and enjoyment, perceived competence, physical activity level,

and physical activity type. Lastly, alpha reliability analyses was conducted for the enjoyment and perceived competence sections of the questionnaire to confirm whether the corresponding items on each section were measuring the same construct. IBM SPSS Statistics Software (Version 20) was used to carry out the statistical analysis.

CHAPTER IV: RESULTS

Of the 108 returned consent forms, 100 children (boys, n =50; girls, n=50) were available to participate in this study. Of these 100 participants, all questionnaires were completed fully, and measurements performed correctly, in the appropriate supervisory conditions described in the methodology. Satisfactory internal reliability was demonstrated in both scales with a Cronbach alpha coefficient of 0.84 for items on the enjoyment scale, and 0.83 for items on the perceived competence scale.

Descriptive Statistics

Participants were asked to self-report the amount of time they spent participating in physical activity outside of school for the previous week. Furthermore, they were asked to provide a breakdown of how much time was spent on different activities. Of the total population sample (n=100), descriptive statistics indicated the mean time spent being physically active in the previous week was 429 minutes. Boys (n=50) reported a mean time of 448 minutes, whereas girls (n=50) reported being active on average 409 minutes. Figure 1.1 illustrates these sex differences, and also provides a further breakdown between team and individual activities. Further descriptive data show the average amount of time each grade spent being active outside of school, also breaking it down in to team and individual based activities (Figure 1.2).

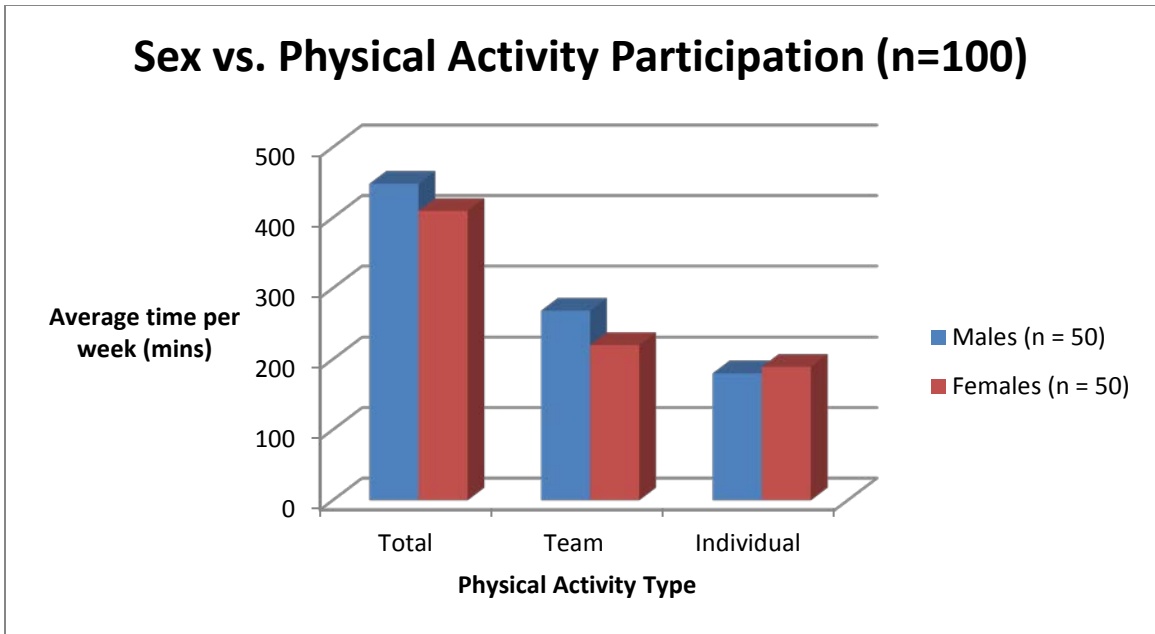


Figure 1.1: Average time (mins) for total, team, and individual physical activity outside of school between boys and girls.

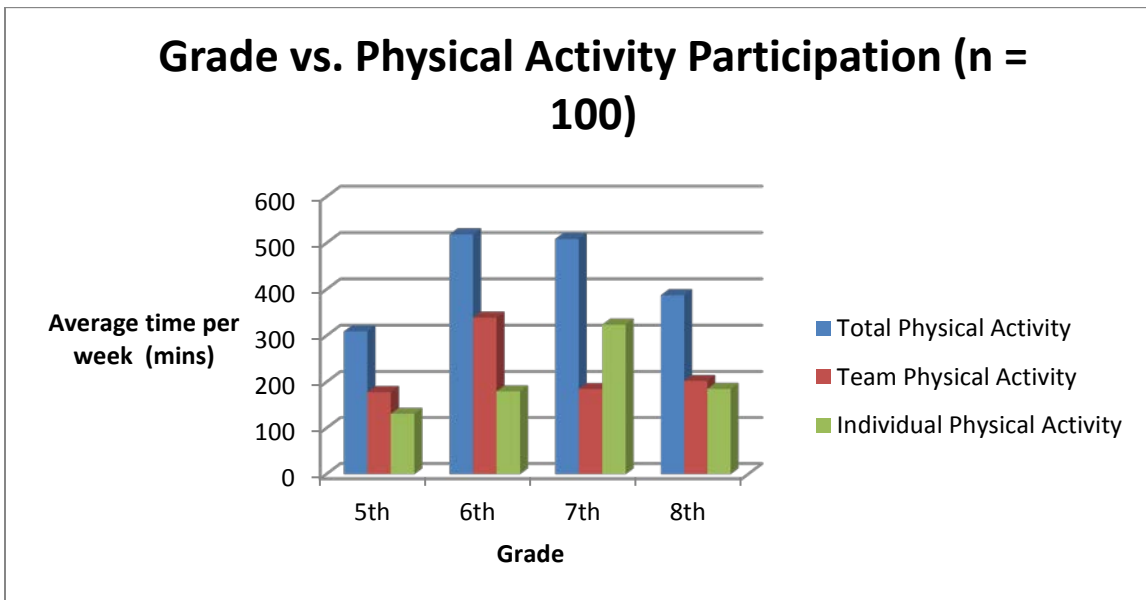


Figure 1.2: Average time (min.) for total, team, and individual physical activity outside of school from fifth through eighth grade.

In terms of meeting the recommended levels of physical activity set by governing bodies, such as the CDC, and the USDHHS, descriptive statistics revealed 57% of the population sample achieved this ‘High Activity’ status, with the remaining 43% in the ‘Low Activity’ group (Figure 1.3). In this same case, apparent differences were present between males and females. 50% of the Male population was classified as ‘High Activity’, whereas 40% of the female population met this target (Figure 1.4a, 1.4b).

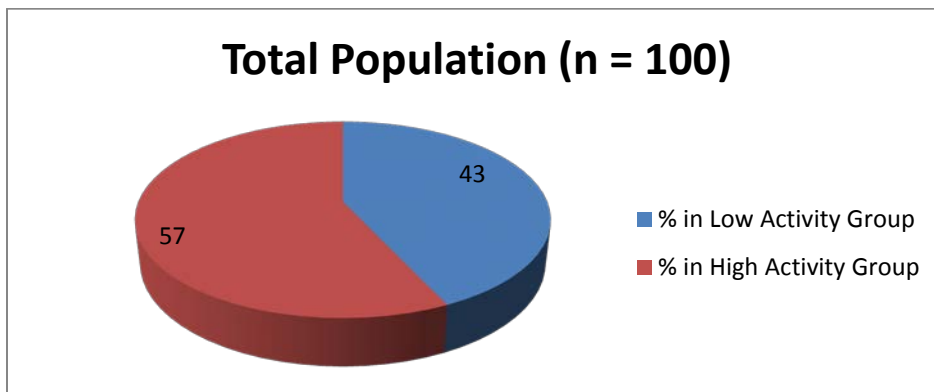
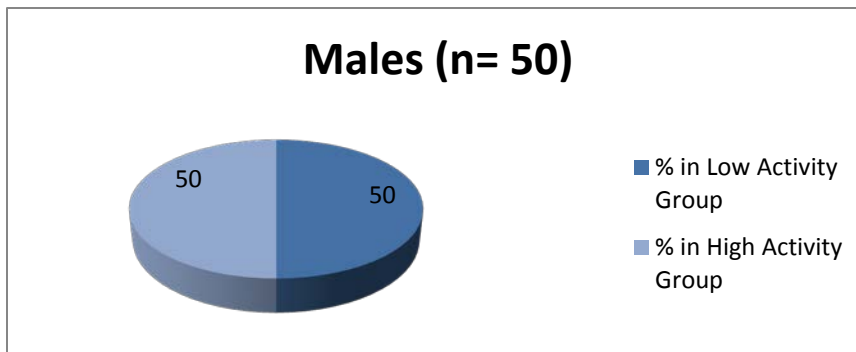


Figure 1.3 *Percentage of population that met recommended levels of daily physical activity (High Activity), or did not (Low Activity)*

(1.4a)



(1.4b)

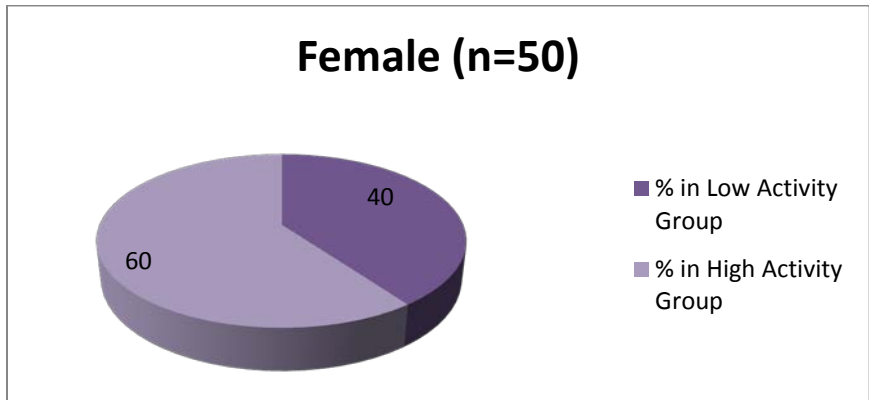


Figure 1.4 Percentage of male (a) or female (b) population that met recommended levels of daily physical activity (High Activity), or did not (Low Activity.)

A supplementary breakdown of whether or not these recommended levels were met, and how they fluctuate from fifth through eighth grade was also analyzed with the results showing 39% of fifth grade, 46% of sixth grade, 92% of seventh grade, and 56% of eighth grade achieved over 300 minutes per week of physical activity outside of school (Figure 1.5), and, thus, meeting the recommended levels of physical activity.

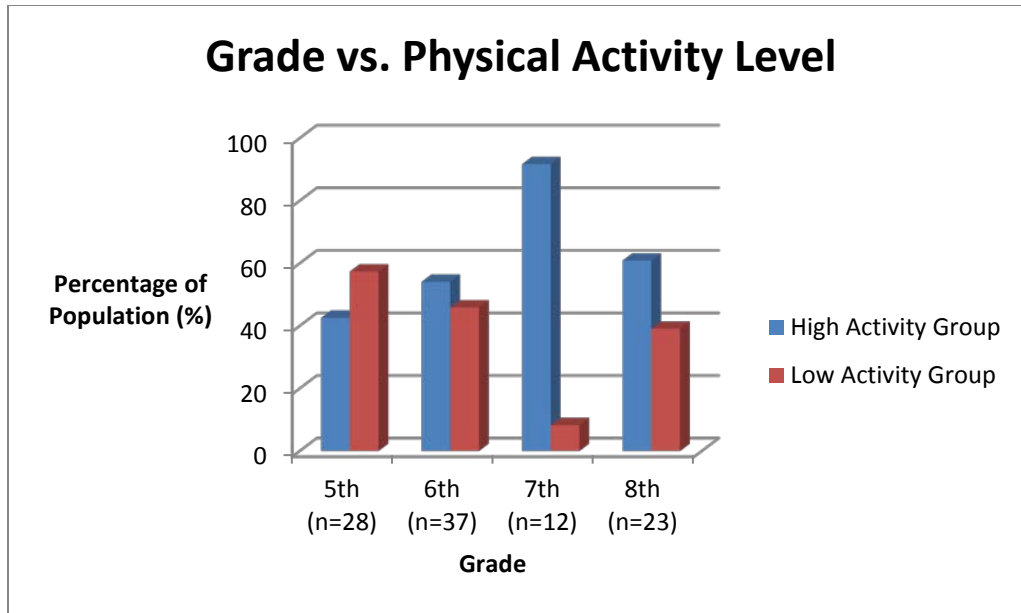


Figure 1.5 *Percentage of 5th through 8th grade students who met recommended levels of daily physical activity (High Activity), or did not (Low Activity).*

Means and standard deviations (s.d.) were computed for the total population sample, separating for males and females, for the factors of enjoyment in PE, and perceived competence in PE (Table 1.1). The mean score for enjoyment in PE was 3.21 (n=100), and 3.30 for perceived competence in PE (n=100). Subjects, who reported higher/lower than this mean, were categorized as having high/low enjoyment and/or perceived competence, as explained in the methodology. Boys (n=50) reported higher levels of enjoyment in PE than girls (n=50), with a mean score of 3.34 compared to 3.07. A similar, albeit minor trend was found between sexes in the descriptive statistics for perceived competence in PE, with males reporting a mean of 3.33, compared to the score of 3.26, which females reported.

Enjoyment and Perceived Competence in PE: Total, Males, Females

	Males (n=50)		Females (n=50)		Total (n=100)	
	Mean	s.d.	Mean	s.d.	Mean	s.d.
Enjoyment in PE	3.34	0.53	3.07	0.55	3.21	0.56
Perceived Competence in PE	3.33	0.58	3.26	0.49	3.3	0.53

Table 1.1 *Enjoyment in PE and Perceived Competence in PE means and standard deviations (s.d.) for total, male, and female, populations.*

Splitting the population in to either high or low enjoyment/perceived competence allowed even further descriptive statistics to be recognized. Those, who reported higher levels of enjoyment (n=50), reported higher levels of physical activity outside of school in terms of mean total time (450 min.), and mean time spent participating in team activities (244 min.), but, interestingly, less time was spent participating in individual activities (180 min.) than their low level of enjoyment (n=50) counterparts (188 min.) (Table 1.2a).

Similar traits were found when analyzing the high perceived competence group (n=54) against their lower scoring classmates (n=46). Table 1.2b documents the numbers showing the trend that those who have higher levels of perceived competence spend more time being physically active outside of school, in terms of total time, team activities and individual based activities, than those who report lower levels of perceived competence in PE.

Enjoyment in PE and Physical Activity Participation

(1.2a)

Physical Activity Participation (minutes per week):	High Enjoyment in PE (n=50)		Low Enjoyment in PE (n = 50)	
	Mean	s.d.	Mean	s.d
Total	450.9	311	406.8	363
Team	244.2	294	218.4	295
Individual	180.9	203	188.5	227

Perceived Competence in PE and Physical Activity Participation

(1.2b)

Physical Activity Participation (minutes per week):	High Perceived Competence in PE (n=54)		Low Perceived Competence in PE (n=46)	
	Mean	s.d.	Mean	s.d
Total	499.1	304	346.5	358
Team	296.6	309	182.7	266
Individual	202.5	218	163.8	210

Table 1.2 High/Low Enjoyment in PE (a) and High/Low Perceived Competence in PE (b) means and standard deviations (s.d.) for total, team, and individual activity time spent outside of school

An analysis was conducted to reveal if individuals who met the recommended levels of physical activity (i.e. >300 minutes per week), reported higher or lower scores in terms of their enjoyment in PE, and perceived competence in PE. Table 1.3 demonstrates these findings, with the population categorized as ‘High Activity’ (n=57) scoring higher on both enjoyment (3.24), and perceived competence (3.45), compared to

their lowering scoring counterparts categorized as ‘Low Activity’, as this group reported 3.17 and 3.09 for enjoyment and perceived competence respectively.

Enjoyment and Perceived Competence in PE with Activity Groups

	High Physical Activity (n=57)		Low Physical Activity (n=43)	
	Mean	s.d.	Mean	s.d.
Enjoyment in PE	3.24	0.57	3.17	0.54
Perceived Competence in PE	3.45	0.45	3.09	0.57

Table 1.3 *High Activity vs. Low Physical Activity scores for Enjoyment in PE and Perceived Competence in PE, means and standard deviations (s.d.)*

Moreover, a breakdown by school grade displayed a fluctuation in scores for enjoyment in PE, and perceived competence in PE, from fifth grade through eighth grade. Table 1.4 illustrates an interesting pattern consistent for both factors of enjoyment and perceived competence. Students reported having higher enjoyment and perceived competence in PE in fifth grade, with scores declining for sixth grade students. This was followed by an increase in scores for seventh grade students before another, albeit more considerable, drop in scores, reported by eighth grade students for both factors.

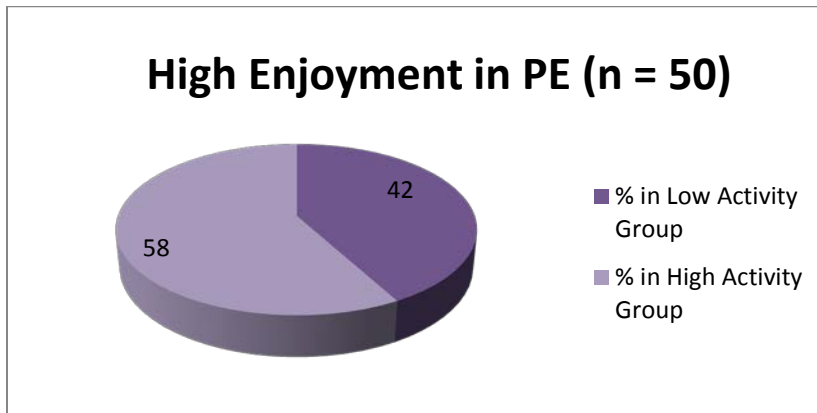
Enjoyment and Perceived Competence in PE with School Grade

School Grade	Enjoyment in PE		Perceived Competence in PE	
	Mean	s.d.	Mean	s.d.
5th (n=28)	3.43	0.44	3.36	0.5
6th (n=37)	3.17	0.57	3.29	0.49
7th (n=12)	3.3	0.51	3.48	0.5
8th (n=23)	2.96	0.62	3.13	0.63

Table 1.4 *Enjoyment in PE and Perceived Competence in PE, means and standard deviations (s.d.), for 5th through 8th grade students.*

Figures 1.6a and 1.6b depict the percentage of the sample population (n=100) who met the recommended criteria for physical activity as suggested by the guidelines mentioned previously. More specifically, these groups were further differentiated in to whether they reported high or low levels of enjoyment in PE. In addition, Figures 1.7a and 1.7b depict the percentage of the sample population (n=100) who met the recommended criteria for physical activity with these groups also further differentiated in to whether they reported high or low levels of perceived competence in PE. The figures for enjoyment in PE represent a minor difference in the percentage of the population that reached the recommended levels, with the ‘High Enjoyment’ group (n=50) showing 58% achieved this goal, and 52% for the ‘Low Enjoyment’ group (n=50). For the factor of perceived competence, there was greater disparity. Of the population sample who reported high levels of perceived competence in PE (n=54), 68.5% achieved the recommended levels of physical activity in the previous week. For those who reported lower levels of perceived competence (n=46), only 36% of this population achieved this target.

(1.6a)



(1.6b)

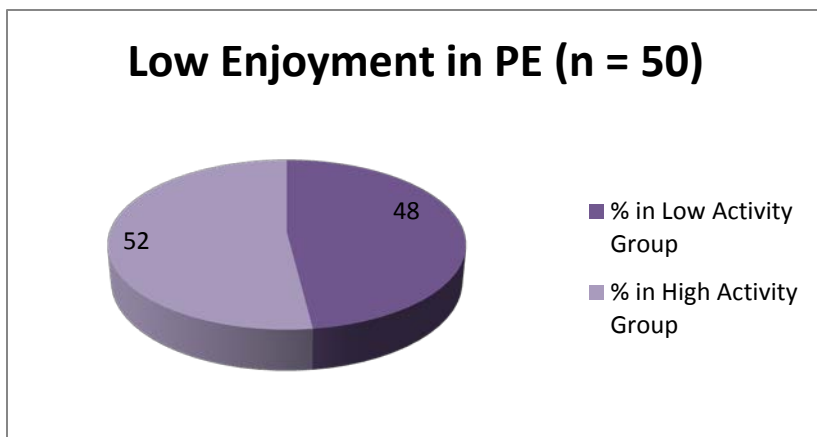
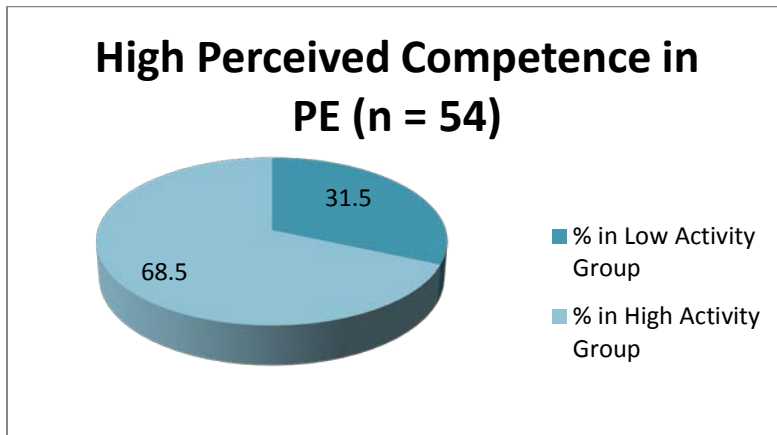


Figure 1.6 Percentage of participants who reported High (a) or Low (b) enjoyment in PE that met the recommended levels of physical activity ('High Activity' group), or did not ('Low Activity' group)

(1.7a)



(1.7b)

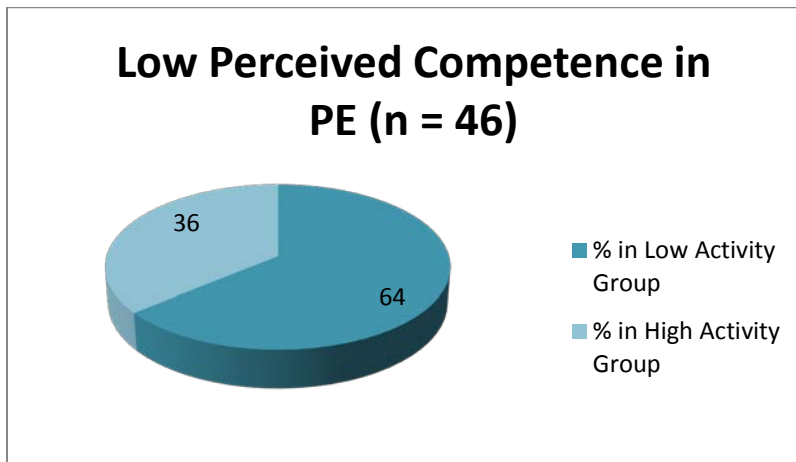


Figure 1.7 Percentage of participants who reported High (a) or Low (b) perceived competence in PE that met the recommended levels of physical activity ('High Activity' group), or did not ('Low Activity' group)

Further descriptive statistics revealed that of the total sample, 65% were classified as 'Healthy Weight', 20% 'Overweight', and 15% 'Obese' (Figure 1.8).

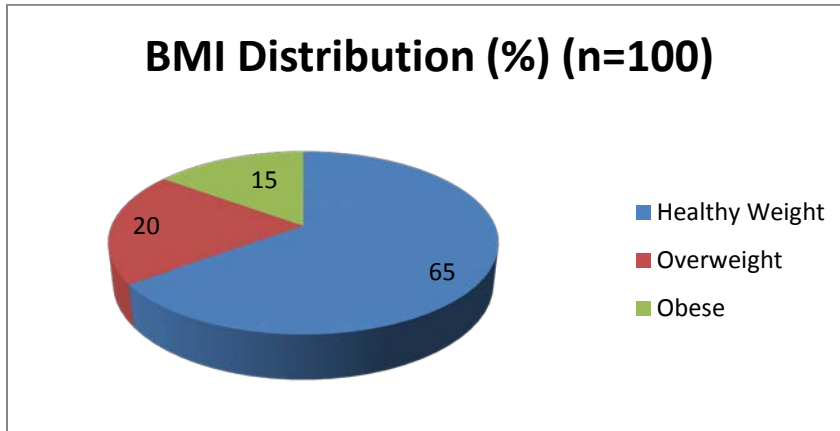


Figure 1.8 BMI categories representing the total population sample (%)

Of the three BMI categories, healthy weight, overweight, and obese, an additional breakdown of physical activity levels for the previous week is illustrated in Figure 1.9, with separation of mean total time being active displayed, including either team or individual activity participation. The descriptive results show healthy weight individuals, in terms of BMI, tend to favor participating in team activities outside of school, with the overweight and obese populations reporting a higher total mean time (minutes) being active outside of school with no real preference shown towards either team ,or individual activities (Figure 1.9).

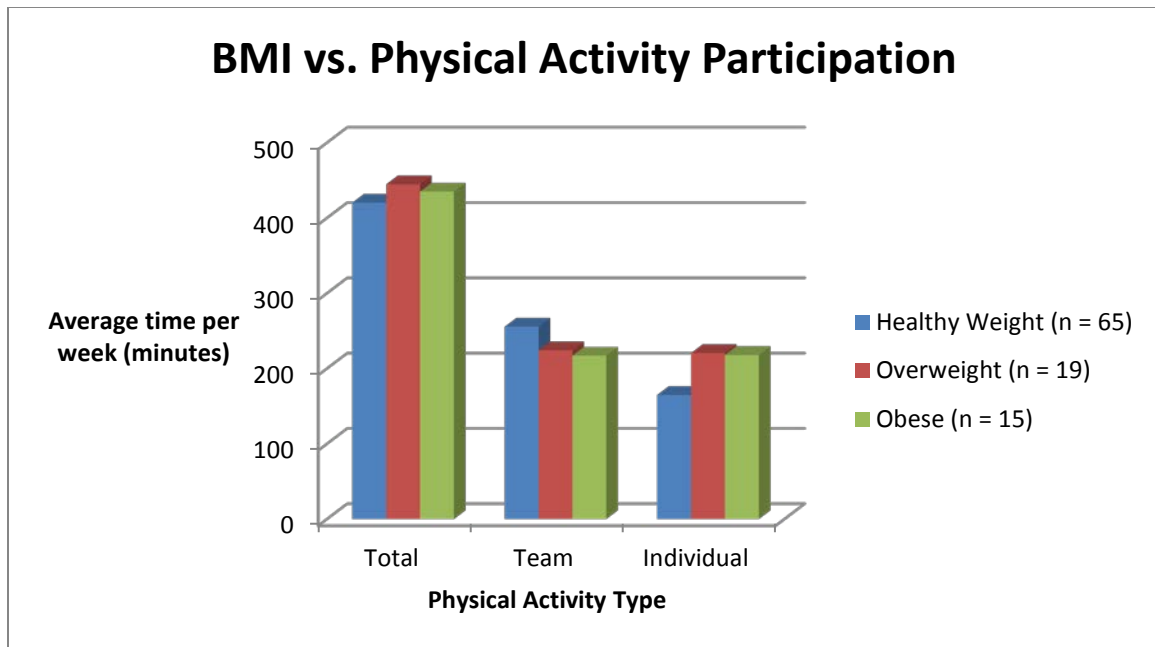


Figure 1.9 Mean total, team, and individual time spent per week (min.) participating in physical activity outside of school for healthy weight, overweight, and obese, populations.

Complementing this descriptive analysis is a breakdown of the BMI categories when the population sample is split in to their respective school grades (Figure 1.10). The figure below displays a general trait across the four school grades where at least 60% of each sample being recognized as ‘healthy weight’, according to BMI calculations. There is a recognizable high proportion (21.6%) of ‘obese’ participants in sixth grade, and ‘overweight’ participants in eighth grade (34%).

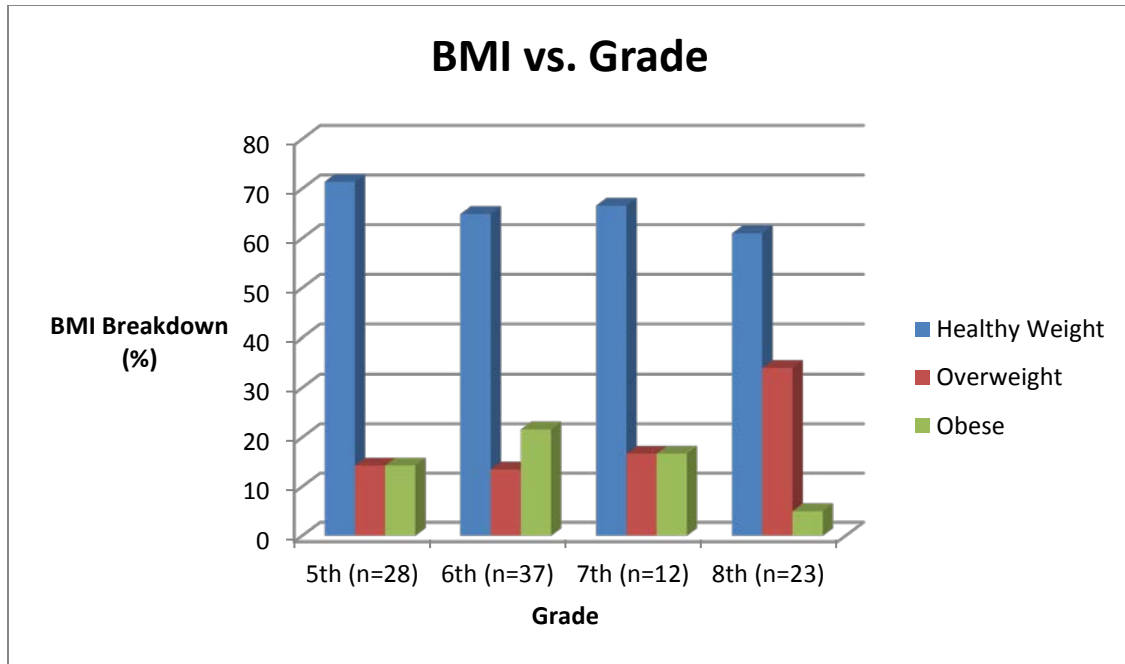


Figure 1.10 Proportion (%) of each school grade classified as either healthy weight, overweight, or obese, as determined by BMI calculations.

To discover any trends in the factors of enjoyment in PE, and perceived competence in PE, means and standard deviations were computed for each categorized population as per the BMI classifications. Healthy weight individuals reported the highest levels of enjoyment and perceived competence in PE, compared to overweight and obese populations. Accordingly, overweight individuals reported higher enjoyment of PE and higher perceptions of competence in PE than the obese population. These descending results are illustrated in Table 1.5 below.

Enjoyment and Perceived Competence in PE with BMI

BMI	Enjoyment in PE		Perceived Competence in PE	
	Mean	s.d.	Mean	s.d.
Healthy Weight (n=65)	3.24	0.55	3.35	0.52
Overweight (n=20)	3.2	0.63	3.2	0.62
Obese (n=15)	3.08	0.53	3.15	0.46

Table 1.5 *Enjoyment in PE and Perceived Competence in PE, means and standard deviations (s.d.), for Healthy weight, Overweight, and Obese populations*

Statistical Analysis

Statistics were run using IBM SPSS Statistics Software (Version 20). A Pearson product moment correlation (PPMC) demonstrated a positive significant correlation ($r=0.62$, $n=100$, $p<0.01$) between perceived competence in PE, and enjoyment in PE. Perceived competence in PE was statistically significant in predicting total physical activity participation in the previous week, $F(1, 98) = 10.597$, $p<0.002$, $R^2=0.098$. The other independent variables of sex, BMI, and enjoyment in PE, were not statistically significant in predicting this outcome ($p>0.05$). Perceived competence in PE was significant in predicting the amount of time spent (minutes) participating in team physical activity, $F(1, 98) = 8.953$, $p<0.004$, $R^2=0.084$. The other independent variables of sex, BMI, and enjoyment in PE, were not statistically significant in predicting this outcome ($p>0.05$). No statistical significance was found between sex, BMI, enjoyment in PE, and

perceived competence in PE, with individual-based physical activity participation outside of school ($p > 0.05$).

Further statistical analysis was performed using an independent-samples t-test, exploring any differences between males and females towards enjoyment in PE, and perceived competence in PE. There was a significant difference in the scores for enjoyment in PE between males ($M=3.34$, $SD=0.53$) and females ($M=3.07$, $SD=0.55$) conditions; $t(98) = 2.44$, $p = 0.017$. No significance was found for perceived competence between males ($M=3.33$, $SD=0.58$) and females ($M=3.26$, $SD=0.49$) conditions; $t(98) = 0.63$, $p = 0.527$.

Chi square tests were run to measure the association between the categorical variables of BMI (Healthy weight vs. Overweight/Obese) and perceived competence in PE (High vs. Low). No statistical significance was found between these variables ($X^2=3.410$, $df = 1$, $p = 0.065$). Three additional chi square tests were run exploring the categorical variables of BMI, with enjoyment in PE (High vs. Low), physical activity participation (High Activity vs. Low Activity), and Type of Activity (Team vs. Individual). The results for all three chi-squares produced no findings of statistical significance. Enjoyment in PE ($X^2=0.178$, $df = 1$, $p = 0.673$), physical activity participation ($X^2=0.477$, $df = 1$, $p = 0.490$), and activity type ($X^2=0.976$, $df = 1$, $p = 0.323$), had no association with BMI, be it healthy weight or overweight/obese participants.

CHAPTER V: DISCUSSION

Overview

The findings of this study support past research on motivational theories and its influence on behaviors in a corresponding environment (Fairclough, 2003; Papaioannou et al., 2006). In agreement with the central hypothesis, and complementing the work of others, children's judgments of their abilities in a particular context, such as school physical education, are not only related to their enjoyment in that particular context (Fairclough, 2003; Goudas & Biddle, 1993) but also to their physical activity participation habits in a different context, such as outside of school (Carroll & Loumidis, 2001).

A positive significant, statistical relationship ($p < 0.05$) was found between the two psychological variables of enjoyment in PE and perceived competence in PE, with perceived competence in PE significantly ($p < 0.05$) contributing towards physical activity participation habit outside of school. Further evidence from this study also supports past research on the issue concerning girls being less physically active than boys (Barr-Anderson et al., 2008; Wang et al., 2002). Although the difference between the sexes was found to be statistically insignificant in this case, there were still noteworthy differences in terms of type of activity revealed by the descriptive statistics. Also of importance is the finding that over 40% of the total sample in question failed to reach the recommended

levels of physical activity for health benefits, as stipulated by the recommendations of NASPE (2004), and the USDHHS (2008). The participants who reached the recommended levels of physical activity reported higher levels of perceived competence and enjoyment in physical education. This coincides with previous work in this field (Carroll & Loumidis, 2001; Fairclough & Stratton, 2005; Raudsepp et al., 2002; Sollerhed et al., 2008).

In addition to these findings, and confirming a research hypothesis, the study revealed boys reported significantly higher levels of enjoyment in school PE than girls ($p < 0.05$), a trend agreed upon in other research (Cairney et al., 2012; Feltz & Petlichkoff, 1983), although perceived competence was found not to be statistically significant ($p > 0.05$) in this comparison. BMI was closely related to perceived competence in PE, although this was not statistically significant at the appropriate level ($p < 0.05$), dissimilar to past studies where low levels of perceived competence was correlated to high BMI's (Fairclough et al., 2012). It is worth noting that over a third of the population sample was classified as overweight or obese, which is in alignment with current statistics for children aged between 2-19 years (CDC, 2012b).

Enjoyment in PE

Disproving the hypothesis, and in line with other research (Carroll & Loumidis, 2001), results revealed enjoyment in school PE did not have any significant relationship with physical activity participation outside of school. Although the non-significance holds true, there are identifiable trends showing that those who possess higher enjoyment

in PE, marginally spent more time being active outside of school, which is in accordance with comparable research where significance was found between the two constructs (Cairney et al., 2012).

Further results revealed those children with low enjoyment of PE spent less time participating in team activities outside of school, and more time in individual activities, than those who reported high enjoyment in PE. Barr-Anderson et al. (2008) cited the appropriateness of PE as a vehicle to address physical, social, emotional, and cognitive growth, and the relevance that team activities has in supporting this development. Therefore, one must be mindful of how the negative experiences in PE have the potential to lead to a lack of participation in team-orientated environments, and perpetual growth in these aforementioned realms ultimately suffers.

Of further significance from the results, was the statistical support towards the hypothesis that boys would have higher levels of enjoyment in PE than girls ($p < 0.05$). A handful of research has found similar results (Barr-Anderson et al., 2008; Cairney et al., 2012; Luke & Sinclair, 1991; Meganck et al., 2003). Although girls' perceptions of competence were lower, but not of significance, this lack of enjoyment may be related to the trend discovered earlier between the two psychological variables. The significant, positive correlation found between enjoyment in PE, and perceived competence in PE, has also been noted in other research studies, and can be seen as a possible reason as to why girls report lower enjoyment in school PE (Carroll & Loumidis, 2001; Fairclough, 2003). Previous research has recognized that enjoyment increases when perceptions of competence are high (Fairclough, 2003; Goudas & Biddle, 1993). Therefore, girls who

report lower levels of perceived competence in PE obtain less enjoyment from PE than boys. Another explanation could be the bias in the PE curriculum towards traditional activities (E.g. time allocated to team games). Meganck et al. (2003) illustrated how this lends hindrance towards girls' enjoyment and experience of PE. In favor of this explanation, results from the descriptive statistics show that compared to team activities, girls spent a larger proportion of their mean total time being physically active, in individual-orientated activities outside of school when compared to boys, indicating an aversion towards team activities (Capel, 2000; Sollerhed et al., 2008; Weiss et al., 1997). Likewise, Dismore and Bailey (2011) recognized how the appropriateness of challenge was linked to enjoyment, and one can understand how girls may have inappropriate experiences throughout their PE careers, perhaps due to an over exposure to team games, may associate a lack of fun with the environment and look to avoid future experiences in related activity settings.

Differing from previous results between genders, where boys were found to reach higher levels of physical activity than girls (Carroll & Loumidis, 2001; Sollerhed et al., 2008), this study revealed only a small margin between girls and boys in terms of reaching the recommended levels of physical activity. Interestingly, those who participated in physical activity outside of school that corresponded with the recommended levels for health benefits (NASPE, 2004; USDHHS, 2008), perceived physical education as more enjoyable than those who did not reach the suggested levels, although this difference was not statistically significant.

Refuting a hypothesis were the results indicating the difference between high and low levels of enjoyment, and the proportion of these categories that met the recommended guidelines. Results favored the high enjoyment group (58%), compared to the low enjoyment group (52%), but were not statistically significant ($p>0.05$). One may argue, in order to reach such a level for health benefits requires a degree of effort from the individual, and past research has found significant relationships between the amount of effort shown to the factors of enjoyment and perceived competence (Raudsepp et al., 2002; Williams & Gill, 1995). Analyzing the theory behind this and in conjunction with the results from this study, individuals who do not enjoy PE and who have low perceptions of competence in PE could be less likely to display effort and participate in physical activity where such effort is required to reach the recommended levels. Equally, those who perceive PE to be enjoyable and report high levels of perceived competence in PE will demonstrate increased effort, participating at physical activity levels that are more demanding and that coincide with national health benefits.

A large amount of the theory has acknowledged enjoyment as a prominent factor in continued participation (Fairclough, 2003; Papaioannou et al., 2006) and past research has recognized the relationships between psychological factors (E.g. enjoyment, perceived competence) and physical activity participation in the same context (Feltz & Petlichkoff, 1983; Gill et al., 1985). However, the present study looked at the relationship in differing contexts, school PE and outside school physical activity. Goudas and Biddle (1993) proposed that these two contexts can be viewed as similar in nature, but do not represent applicable trends because they still remain two different environments. The

differentiation between the two contexts could be seen as a further reason as to why enjoyment in PE is not a significantly important factor when it comes to physical activity participation outside of school.

Perceived Competence in PE

The findings from this study support the research hypothesis and previous research (Carroll & Loumidis, 2001; Cairney et al., 2012; Fairclough & Stratton, 2005) regarding perceived competence in PE and physical activity participation outside of school. Those, who perceived themselves as competent within the domain of PE, participate in more physical activity (Papaioannou et al., 2006) than those who do not perceive themselves as competent in PE ($p < 0.05$). Although these results proved significant, less than 10% of variance was accounted for. Further results of this study confirm that those who reached the recommended levels of physical activity for health benefits, reported higher perceived competence in PE than those who took part in lower amounts of activity. In further support of these findings are the descriptive statistics revealing 68.5% of the high perceived competence group meeting the recommended levels, compared to 36% of the low perceived competence group. Consequentially, 64% of this low perceived competence group are not meeting the recommendations. From these findings there is evidence to suggest how perceived competence in PE can influence physical activity participation outside of school, however it seems that this relationship can work both ways. Previous investigation has acknowledged a task goal-orientated, mastery environment lends itself to increased perceptions of competence, and, therefore, increased participation in in sport and exercise settings (Cairney et al., 2012;

Fairclough & Stratton, 2005; Papaioannou et al., 2006). Additionally, related exploration in to various sport settings has acknowledged the detrimental role perceived competence plays in participation (Klint & Weiss, 1987; Williams & Gill, 1995). However, the findings suggest a flexible, two-way relationship exists between perceived competence and physical activity participation outside of school. Future research could measure this psychological factor in both contexts (school PE and outside school physical activity) to determine if one significantly influences the other. This relationship is of particular importance to professionals in the fields of health, sport, and physical education, who are concerned with keeping children motivated to participate in regular physical activity. With these children reporting lower levels of perceived competence (64%), and perceived competence a predictor of participation (Fairclough, 2003), an obligation for professionals in the field can be found by having an astute awareness, and the aptitude to implement, a task goal-orientated, mastery environment (Cairney et al., 2012; Fairclough & Stratton, 2005; Papaioannou et al., 2006).

Confirming another research hypothesis, are the findings that those who had higher perceived competence in PE, spent more time ($p < 0.05$) participating outside of school in team activities than those who reported low perceptions of competence in PE, although less than 10% of variance was accounted for. No significance was found between perceived competence and individual activity participation. The majority of schools, such as the one in this study, support the traditional public school 'curriculum', where the emphasis is favored towards team activities (Barr-Anderson et al., 2008; Meganck et al., 2003; Sollerhed et al., 2008). Additionally, this finding carries serious

implications for physical educators, as children are making conscious decisions not to participate in activities outside of school as a result of low perceptions of competence or negative experience in PE. In agreement, past theory has recommended to professionals, that in order to enhance positive experiences in PE and to increase chances of future participation, they must enhance perceived competence by constructing a climate that motivates and stimulates, culminating in an enjoyable experience (Fairclough & Stratton, 2005; Standage et al., 2003). Further, this climate must contain meaningful and sophisticated practical experiences to provide the individual with a learning challenge and a sense of accomplishment (Dismore & Bailey, 2011).

Dissimilar to the results found by other studies on sex differences when measuring perceived competence (Feltz & Petlichkoff, 1983; Raudsepp et al., 2002; Sollerhed et al., 2008), this study produced insignificant findings between males and females and their perceptions of competence in PE ($p>0.05$). Regardless of activity, or experience in PE, in this case males and females have similar perceptions of their competence in PE, but as the results of the study show, females significantly enjoy PE less than males. Although perception of competence did not differ enough to be significant between sexes, the two psychological variables clearly have a positive significant relationship, with links to physical activity participation habits in an alternative environment. This relationship must be acknowledged and understood, when planning future physical activity curricula.

Physical Activity Participation

The descriptive statistics reveal some interesting trends, most noticeably males reported higher levels of physical activity participation than females, supporting a research hypothesis and past findings in this field (Barr-Anderson et al., 2008; Goudas et al., 1994; Wang et al., 2002). Within these findings are the results looking at activity type, with a large proportion of the male sample reporting the majority of their time is spent being active in team games, compared to the females. Again, the preference shown towards team activities follows suit with past research where males displayed favoritism towards team activities, and females showed partiality to individual activities (Luke & Sinclair, 1991; Meganck et al. 2003).

Of particular interest is the lack physical activity participation reported by the 5th grade students. A possible explanation for this reduction in activity could be attributed to the reduced amount of time this group received for PE during the school year. As stated in the methodology, 5th grade students received the equivalent of approximately 75 minutes per week of PE. When compared to the 6th, 7th, and 8th grade students who received approximately 250 minutes per week of PE, there is an evident discrepancy between 5th grade and the other school grades investigated in this study (6th, 7th, and 8th). This lack of time in PE could explain this inconsistency as these students are not gaining the same exposure to physical activity environments, the positive associations, and all the physical, socio-emotional, and cognitive gains of being active are not as present with less time given to this age group.

Studies have shown the numerous benefits of physical activity, enjoyment, and perceived competence, and how these factors play a positive role and encourage continued participation (Barr-Anderson et al., 2008; Cairney et al., 2012; Carroll & Loumidis, 2001; Papaioannou et al., 2006). In accordance with other studies (Coulter & Woods, 2011; CDC, 2011), physical activity participation levels declined from grade 6th through 8th grade. Furthermore, of the total sample population, 43% failed to meet the recommended amount of physical activity to maintain a healthy and active lifestyle. These findings are lower than recent reports conducted by the CDC (2011), where only 29% of students met these recommendations. However, this data range was for high school populations, and as the research has confirmed, physical activity levels appear to decline with age (Goudas et al., 1994; Papaioannou et al., 2006).

Of more relevance, Trost et al. (2013) examined the physical activity patterns of elementary school children. In summary, less than one in four (<25%) of elementary school children met the recommended levels for daily physical activity. The results from this study showed comparable results. Of the twenty eight 5th grade students, approximately 38% met the recommended levels for physical activity. Regular physical activity has shown to positively contribute in terms of tackling this epidemic (USDHHS, 2008), therefore, there is great importance in implementing effective policies which breed life-long physical activity habitual foundations. Moreover, other factors can contribute and influence a child's physical activity patterns. Although this study did not directly investigate the effect, if any, on external factors to physical activity participation, past research has revealed the relationship between parental behavior in terms of being a role

model, providing the necessary support, and the significant effect this had on the amount of time a young child spends being physically active (Bois et al., 2005; Klint & Weiss 1987; Sollerhed et al., 2008; Stein et al., 2007). Alternatively, Seabra et al. (2012) determined physical activity interventions should focus on girls, obese children, and lower socioeconomic status children, as these individuals tend to have lower levels of perceived physical competence and less parent physical activity support, which puts them at greater risk of being physically inactive.

Sallis et al. (2000) explored how variables (e.g. parental overweight status, program/facility access) can be associated with children's physical activity, and a high proportion of this cluster of variables could be grouped under lifestyles. The implications of a sedentary lifestyle carry serious weight. Diabetes, cardiovascular disease, and obesity, are major contributors to the current detrimental state of public health and well-being in this country (CDC, 2012a).

From the total population sample of 100 students, 65 were classified by BMI (CDC, 2012a) as healthy weight. The remaining 35 students were either overweight (n=20), or obese (n=15). With 35% of the total population in one of these two undesirable categories (e.g. overweight, obese), the national statistics on obesity, categorizing 17% of children between 2-17 years of age as obese, hold some truth (CDC, 2012b).

From the descriptive statistics, enjoyment in PE and perceived competence in PE decreased as BMI increased. However, BMI was found to be insignificant ($p=0.065$) with perceived competence in PE, although with a larger population sample, perhaps statistical

significance could be found. Fairclough et al. (2012) produced findings that demonstrated low perceptions of competence in PE correlated with high BMI's. Seabra et al. (2012) confirmed this relationship where healthy weight individuals, as per BMI categorization, reported higher perceptions of competence in physical activity settings. Furthermore, studies conducted by Barr-Anderson et al. (2008), and Ishee (2003), demonstrated how low enjoyment in PE was a predictor of increased BMI's. This condition was unproven in this study, with no statistical significance found between BMI and enjoyment ($p>0.05$). Additionally, higher levels of BMI did not equate to less time being physically active outside of school. In fact, overweight and obese students reported higher levels of physical activity than healthy weight participants. Therefore, the aforementioned hypotheses regarding BMI appear to be refuted. Of interest, a high proportion of this reported physical activity time for both BMI categories was reported as individual activities such as walking, jogging, and skateboarding. Quantifying the amount of time for such open-ended activities can lead to misreporting when it comes to using self-report tools, such as questionnaires, and, therefore, consideration is required when analyzing the results (Carroll & Loumidis, 2001).

Summary

This study examined the relationship between two psychological variables (enjoyment and perceived competence) in physical education (PE) with participants' physical activity participation outside of school. Between the two psychological variables, a strong, positive, significant relationship was revealed, supporting past research surrounding the correlation between enjoyment with perceived competence in

the context of school physical education (Carroll & Loumidis, 2001; Fairclough, 2003; Goudas & Biddle, 1993). Furthermore, the significant relationship found showing that those who have higher perceived competence in PE participate in higher amounts of physical activity outside of school is consistent with similar research (Cairney et al., 2012; Feltz & Petlichkoff, 1983; Papaioannou et al., 2006).

Although the relationship between enjoyment in PE to physical activity participation was found to be statistically insignificant, encouragingly, results indicated children were still participating in physical activity outside of school even when reporting low levels of enjoyment in school physical education. However, the findings of this study reflect consistencies with other research where females are reporting significantly lower levels of enjoyment in PE than males (Barr-Anderson et al., 2008; Cairney et al., 2012). With research showing that males' enjoyment in PE is heightened by team games, and females' enjoyment by individual activities, an astute awareness of these sensitivities to experiences in PE is necessary (Meganck et al., 2003).

Perceived competence in PE was found to be statistically significant in predicting physical activity participation outside of school in team games. These results reiterate the vital role physical educators play in providing developmentally appropriate, stimulating, challenging yet achievable experiences across the curriculum, which ultimately avoid alienating children from future experiences in activity settings. More importantly, this finding has direct implications for physical educators. Educators need to plan and deliver lessons that can promote individual competence, contributing to feelings of enjoyment, and ultimately enhancing the individuals' intrinsic motivation to seek out and pursue

further challenges and future participation (Goudas et al., 1994). Consideration of the way teaching and learning environments are constructed, by having a shrewd awareness of the significant role psychological variables can play in sport and exercise participation, is a pertinent concept professionals in the field must acknowledge.

Limitations and Future Research

This research was constrained by a number of limitations that should be taken into consideration when interpreting the findings. Firstly, the rather small sample size prohibits generalizations being extended to other populations. Secondly, the use of mean splits to differentiate between high and low for enjoyment and perceived competence was not as accurate a method as possible for differentiating between groups. Future research might be worth considering using more specific groupings such as high, medium, and low. Thirdly, past research has shown self-evaluations of competence at a young adolescent age are less accurate since individuals rely heavily on others (e.g., teacher, coaches, parents) as a source of their judgments (Nicaise, Bois, Fairclough, Amorose, & Cogerino, 2007). The fourth limitation is the classification of the activity groupings (set at ± 300 minutes), as outlined in the methodology, where estimation was assumed that children would attain the other 120 minutes of needed exercise from other activity domains such as school PE, recess, and lunch break.

A further limitation, and perhaps one of great significance, is the self-report nature of the physical activity participation levels for the previous week. Although these measures are deemed accurate when other objective measures (e.g., HR monitors,

Accelerometers, etc.) are not available, the mean total time for being physically active for the past seven days was above 400 minutes. The large standard deviations indicated the means were not a representative sample of the population, however, for the purpose of the statistical analysis, participants were grouped in to either 'high' or 'low' activity groups based on the ± 300 minutes benchmark, and in agreement with national guidelines (NASPE, 2004; USDHHS, 2008).

Future research in this field could consider using more objective measures, with devices such as the ActiGraph™, to report physical activity behavior. From the lack of allocated PE time the 5th grade students received, it may be worthwhile to explore younger elementary school children's' physical activity behavior and patterns. Another consideration for future study would be to measure children's enjoyment and perceived competence in both school PE, and in their out of school physical activity context, in order to gain a further understanding of these psychological variables and how they may interact between the two environments.

A different course of research may want to explore how other school-based factors, such as attendance, academic performance, physical fitness, and nutritional preference, relate to physical activity participation. Furthermore, these factors could be analyzed with respect to the psychological variables explored in this research. With such importance placed on success in traditional school subjects (e.g., math, English), future research may want to explore possible correlations between experiences in PE, leisure physical activity participation habits, and academic achievement in school.

Cardiovascular fitness has been found to predict academic achievement (Kwak et al. 2009). If strong associations can be made, adding to the preexisting body of knowledge, then perhaps more attention and importance will be placed on physical activity experiences in school settings, and the cognitive benefits one can receive from being active on a regular basis. Finally, a longitudinal analysis would give insight as to how enjoyment in PE, perceived competence in PE, and physical activity participation habits change over the course of a child's school existence. Possessing the data to allow for the identification of trends in these factors could perhaps isolate certain periods in a child's life where intervention is needed most, a worthwhile consideration that will better inform the practice of educators and professionals in physical activity settings.

APPENDICES

Appendix A

PARENTAL CONSENT FORM

1) **Title of Research Study:** Children’s enjoyment and perceived competence in physical education and its effects on their physical activity participation outside of school.

2) **Investigator(s):** Keith Brazendale (Student Investigator), B. Sue Graves Ed.D (Faculty Advisor)

3) **Purpose:** The purpose of this research study is to examine children’s enjoyment and perceived competence in school physical education (PE), and the effects these factors may have on their physical activity participation out with school hours.

4) **Procedures:** As part of this study, your child will complete two questionnaires at school which will be administered by the investigator. Your child will also have their height, weight and birth date recorded. For this procedure your child will remove their shoes and remain fully clothed. Each questionnaire should take no longer than 5 minutes to complete, and height and weight measurement will be administered after completion of the questionnaire by the investigator in a private area accompanied by a member of staff. Your child will be asked to answer a number of questions about physical education and their physical activity habits outside of school. All information will remain anonymous.

Alternative Procedures: If you do not want your child to participate, then she/he will be allowed to study as usual.

5) **Risks:** The risks involved with participation in this study are no more than your child would experience in regular school activities. It is unlikely your child will experience any harm or discomfort.

6) **Benefits:** We do not know if your child will receive any direct benefits by taking part in this study. However, this research will contribute to a greater understanding of how experiences in school PE are linked with participation in physical activity outside of school. Recent government figures illustrate a growing amount of children and young adults are classified as overweight or obese. Participating in regular physical activity has many social, emotional and physical benefits that contribute to good health and well-being throughout adolescent and adult life.

7) **Data Collection & Storage:** Any information collected about your child will be kept confidential and secure and only the people working with the study will see your child’s data, unless required by law. The data will be kept for 3 years in a locked cabinet in the investigator’s office. After 3 years, paper copies will be destroyed by shredding. We may publish what we learn from this study. If we do, we will not let anyone know your child’s name/identity unless you give us permission.

8) **Contact Information:**

*For questions or problems regarding your child’s rights as a research subject, you can contact the Florida Atlantic University Division of Research at (561) 297-0777. For other questions about the study, you should call the principal investigator(s), _Keith Brazendale or Dr. Sue Graves_at_(561_)297-2938_.

9) **Consent Statement:**

*I have read, or had read to me, the information describing this study. All of my questions have been answered to my satisfaction. I allow my child _____ to take part in this study.

First Name / Last name

My child can refuse to participate or stop participating at any time without giving any reason and without penalty. I can ask to have the information related to my child returned to me, removed from the research records, or destroyed. I have received a copy of this consent form.

Signature of Parent or Guardian: _____ Date: _____

Printed name of parent: First Name _____ Last Name _____

Signature of Investigator: _____ Date: _____

Appendix C
 Intrinsic Motivation Inventory
 (Ryan, 1982).

Please **Circle:** Boy Girl **Grade:** 5th 6th 7th 8th

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

1	2	3	4
Strongly Disagree	Disagree	Agree	Strongly Agree

Part One

- I enjoy PE very much _____
- The activities are fun to do _____
- I would describe PE as very interesting _____
- I look forward to taking part in PE at school _____
- When I take part in PE, I think about how much I enjoy it _____

Part Two

- I think I am pretty good at PE _____
- Compared to other children, I think I am pretty good at PE _____
- After trying a skill/activity in PE, I feel able to do it well _____
- I am happy with my performances in PE _____
- I feel confident in my ability in PE _____

Appendix D
Physical Activity Assessment
(Carroll & Loumidis, 2001)

Part Three

Please answer the following questions as truthful and as accurately as possible

- 1) How many times **last week** did you take part in physical activity **outside of school**?
_____ time(s)

- 2) What was the **total** amount of time **last week** that you spent doing physical activity **outside of school**? _____ hour(s) _____ minutes

- 3) What activity did you participate in and for how long? (*e.g. basketball = 3 hours per week, tennis = 30 minutes per week*)

- 4) For each activity or time that you participated in physical activity, please consider whether it made you sweaty, out of breath **or** tired? (*E.g. swimming = tired!*)

INVESTIGATOR USE ONLY

Date:

FCAT Levels:

Sex (circle): M or F

Fitness Score:

DOB:

Lunch (S) or (H):

of days absent:

Height:

Weight:

Appendix E

BMI Percentile Calculator for Child and Teens

Centers for Disease Control and Prevention (2012a)

<http://apps.nccd.cdc.gov/dnpabmi/>

BMI Percentile Calculator for Child and Teen English Version

This calculator provides BMI and the corresponding BMI-for-age percentile on a CDC BMI-for-age growth chart. Use this calculator for children and teens, aged 2 through 19 years old. For adults, 20 years old and older, use the [Adult BMI Calculator](#).

[Measuring Height and Weight Accurately At Home](#)

BMI Calculator for Child and Teen English | Metric

Birth Date:
month day year

Date of Measurement:
month day year

Sex:
 boy girl

Height, to nearest 1/8 inch:
 feet, inches, fractions of an inch
(12 inches = 1 foot; Example: 4 feet, 5 1/2 inches)

Weight, to nearest 1/4 (.25) pound:
 pounds, fractions of a pound
(8 ounces = 1/2 pounds; Example: 75 3/4 pounds)

Calculate

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Education

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Master's Thesis

Children's Perceived Competence and Enjoyment in Physical Education and its Effects on their Physical Activity Participation Outside of School

GTCS Registered Teacher – Physical Education 08/2010
General Teaching Council for Scotland, Scotland, UK.

Bachelor of Education (B.Ed. - Honors) - Physical Education 07/2009
The University of Edinburgh, Edinburgh, U.K.

Educational/Professional Experience

Graduate Assistant – Exercise Physiology Lab Instructor 08/2011-Present
Florida Atlantic University - College of Education
Department of Exercise Science and Health Promotion (ESHP)

- Teaching undergraduate exercise physiology labs via PowerPoint lectures and practical sessions.

Strength and Conditioning Coach – Soccer 2012 Season
Fort Lauderdale Strikers – Fort Lauderdale, FL.

- Responsible for conditioning of professional soccer players throughout season.

Director of Operations – Soccer 05/2011-05/2013
Delray Beach Athletic Club – Delray Beach, FL.

- Assisting the director of coaching with training and coaching development programs for all age groups.

Secondary School Teacher – Physical Education 08/2009-07/2010
Cults Academy – Aberdeen, Scotland.

- Full-time physical education (PE) teacher at top 5 nationally ranked high school.

Presentations

- Brazendale, K. (2012), An Empirical study of Children's Enjoyment and Perceived Competence in Physical Education and its effects on Their Physical Activity Participation Outside of School
FAU AD Henderson High School, Boca Raton, FL
Student Achievement Council Research Symposium 11/2012
- Brazendale, K. (2012), Entering a Career in PE in Scotland: A personal view of hopes, aspirations and challenges in the era of a Curriculum for Excellence
The University of Edinburgh, Edinburgh, U.K.
'Excellence in Teaching' Presentation 05/2009

Professional Affiliations

- National Strength and Conditioning Association Member (NSCA) 05/2012 - Present
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References available on request