Cardiff School of Sport

DISSERTATION ASSESSMENT PROFORMA:

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Comments	Section
	Title and Abstract Title to include: A concise indication of the research question/problem. Abstract to include: A concise summary of the empirical study undertaken.
	Introduction and literature review To include: outline of context (theoretical/conceptual/applied) for the question; analysis of findings of previous related research including gaps in the literature and relevant contributions; logical flow to, and clear presentation of the research problem/ question; an indication of any research expectations, (i.e., hypotheses if applicable).
	Methods and Research Design To include: details of the research design and justification for the methods applied; participant details; comprehensive replicable protocol.
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	Discussion and Conclusions [2] To include: collation of information and ideas and evaluation of those ideas relative to the extant literature/concept/theory and research question/problem; adoption of a personal position on the study by linking and combining different elements of the data reported; discussion of the real-life impact of your research findings for coaches and/or practitioners (i.e. practical implications); discussion of the limitations and a critical reflection of the approach/process adopted; and indication of potential improvements and future developments building on the study; and a conclusion which summarises the relationship between the research question and the major findings.
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CARDIFF SCHOOL OF SPORT

DEGREE OF BACHELOR OF SCIENCE (HONOURS)

SPORT & PHYSICAL EDUCATION

INVESTIGATION OF THE RELATIONSHIP BETWEEN PHYSICAL LITERACY AND THE TARGET STRUCTURES

(Dissertation submitted under the discipline of _____Pedagogy_____

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INVESTIGATION OF THE RELATIONSHIP BETWEEN PHYSICAL LITERACY AND THE TARGET STRUCTURES

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TABLE OF CONTENTS

CHAPTER IV

CHAPTER V

CHAPTER VI

CHAPTER VII

APPENDICES

LIST OF TABLES

LIST OF FIGURES

Title Page

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I would like to show my appreciation and thanks to all the people who have helped me through this study. To Dr. Kevin Morgan for his invaluable support, knowledge and guidance throughout the project. To all the PE staff and pupils from the school used within the study, who without them the research wouldn't have been possible. Finally I would like to thank my friends and family for their constant support throughout, especially my mum and dad who have been so supportive in my time spent at Cardiff Metropolitan University.

ABSTRACT

Physical literacy is an emerging concept within physical education (PE). It aims to provide individuals with increased physical competence, confidence and motivation to maintain purposeful physical pursuit throughout their life (Whitehead, 1990a; 2010a. Research surrounding achievement motivation has demonstrated the role teachers can play in increasing motivation within PE by manipulating the motivational climate. Teachers, as significant others, can manipulate the motivational climate by using Epstein's (1989) TARGET structures (task, authority, recognition, grouping, evaluation and time), which can foster motivation within PE. The purpose of this study was to primarily investigate if the TARGET structures predict perceived physical literacy (competence, confidence, motivation, knowledge and understanding within PE. A second aim of the study was to investigate whether the perception of any one structure was more prominent in predicting perceived physical literacy over other TARGET structures. Two hundred and thirty five male and female year 8-11 pupils, aged 12-16, were given two PE specific questionnaires to measure their perceptions of TARGET and physical literacy. Multiple regression analysis revealed that perceptions of task and recognition-evaluation were significant predictors of all the attributes of perceptions of physical literacy within PE. Perceptions of time and authority were also found to be significant predictors of perceived pressure, importance and enjoyment within PE. These findings provide valuable suggestions for PE teachers and education specialists in emphasising and manipulating the TARGET structures to help promote physical literacy and eventually keep individuals involved with physical activity.

CHAPTER I

INTRODUCTION

1.0 INTRODUCTION

Physical Literacy is a developing concept within Physical Education (PE) which was first introduced by Margret Whitehead in (1987; 1990a). The concept looks at individuals as a whole looking to develop their 'motivation, confidence, physical competence, knowledge and understanding to value and take responsibility for maintaining purposeful physical pursuits throughout their life course' (Whitehead, 2010a, p.11). One of the main purposes of physical literacy is that pupils leave school with a rich and rewarding experience that motivates them to continue with physical activity once they have finished education (Whitehead, 2005b). Many PE teachers aim to promote success and encourage lifelong participation in sport, within their teaching methods (Todorovich & Model, 2005).Significant others such as PE teachers can help foster this desire to be active by manipulating the motivational climate (Biddle, 2001; Roberts, 2001; Treasure, 2001).

A Motivational climate is a situationally induced psychological environment directing goals (Ames, 1992a). Achievement goal theory produces the background for a motivational climate. Achievement goal theory suggests that individuals participate in activities such as in a PE environment to show competence or avoid demonstrating incompetence when performing tasks (Nicholls, 1984, 1989). Nicholls (1989) proposed that there are two ways of recognising competence within an achievement situation like a PE class. How an individual views the concept of ability shapes how they will approach the situation (Ames, 1992a; Dweck & Leggett, 1988; Nicholls, 1989). A task involved individual is focused on task-mastery and self-improvement. An ego involved individual is focused on out performing others and comparing their achievements with others, this is to help enhance their social status (Nicholls, 1989). According to Ames (1992b) and Nicholls (1989) achievement goal theory suggests that an individual's achievement incentive can be explained by their achievement goals (task and ego goal orientation), while significant others can manipulate situational factors such as the motivational climate. This study will look at a specific teaching structure, TARGET looking at the impact it has on physical literacy in a PE setting.

Ames (1992b) suggested that in order to promote a mastery motivational climate an intervention based around the TARGET (Epstein, 1989) acronym should be used. The acronym refers to task, authority, recognition, grouping, evaluation and time. Researchers have looked at the effect of a TARGET intervention on participant's perception of the motivational climate. For instance Cecchini et al. (2001) examined if the use of TARGET on the motivational climate affected the cognitive and affective responses to athletics during PE. A mastery climate was linked with enjoyment, increased effort and perceived ability. Morgan and Carpenter (2002) found that they could use TARGET to manipulate the motivational climate to become task involved. The study showed that the participant's satisfaction increased, allowing them to have a more positive attitude towards PE. Further studies found that TARGET was effective in developing a mastery climate, with classes having a positive attitude to become healthier in response to the environment created (Digelidis, Papaioannou, Christodoulidis & Laparidis, 2003; Barkoukis, Tsorbatzoudis & Grouios, 2008).

Motivation is a key attribute of physical literacy and is interlinked with competence and confidence (Whitehead, 2010a). Motivation can encourage participation and this involvement can enhance confidence and physical competence. The development of confidence can in turn maintain or increase motivation (Whitehead, 2010a). Whitehead & Murdoch (2006) deliberated that the development and maintenance of physical literacy will be influenced by numerous significant others. Due to motivation being at the heart of physical literacy, more emphasis should be placed on ways to promote motivation (Murdock & Whitehead, 2010). Research (e.g. Morgan & Carpenter, 2002; Weigand & Burton, 2002; Morgan & Kingston, 2008, 2010) has shown that using TARGET will improve motivation within PE lessons by creating a perceived motivational climate. It may follow, therefore, that implementing the TARGET structures within PE will have an impact on pupils' physical literacy. There has been very little research on ways to develop physical literacy with PE, therefore this research aims to investigate the relationship the TARGET structures have with physical literacy, while creating ways to help increase physical literacy within the national curriculum.

The study will investigate the relationship between the TARGET structures task, authority, recognition, grouping, evaluation and time and the components which make physical literacy, motivation competence and confidence. In order to achieve the aims of this study, quantitative methods will be used to record statements for pupils experiences within PE lessons related to varying aspects of TARGET and physical literacy. A further aim of the study is to investigate if a specific TARGET structure has a more prevailing influence on physical literacy in PE. If there is a specific structure which is more dominant this can help provide foundations for effective interventions and strategies to help optimally enhance physical literacy within PE.

CHAPTER II
REVIEW OF LITERATURE

2.0 LITERATURE REVIEW

The aim of this chapter is to review existing literature surrounding physical literacy, motivational climate and TARGET. The literature will be focused and linked to the aims of the study in investigating a relationship between the TARGET structures and physical literacy. A review of motivation will be central to this chapter as this is a key link between TARGET and physical literacy. The first topic to be reviewed will be the aims and values of PE and how they are shaped by the national curriculum (NCPE). There will be a particular focus on the impact the NCPE (2011) has on PE teachers due to their significance over pupils and there influence they can have on the environment. This will progress on to physical literacy (Whitehead, 1990) looking at the impact this can have over students. This will lead on to developing physical literacy within the national curriculum by introducing achievement goal theory (AGT) (Nicholls, 1989), defining the area with an explanation of the goal orientations incorporated within achievement setting such as PE. This provides a background to introduce a motivational climate within PE. Motivational climate will then be reviewed looking at the two principal environments which can be manipulated within a PE setting. Following this, Ames (1992b) TARGET structures will be discussed individually with their relationship to a PE environment explored showing the importance and influence they have with PE lessons. Throughout the chapter links between motivation and physical literacy will be made to help reinforce and produce a strong rationale for the study. Clear links will be made relating to the aims stated within the introduction of the study.

2.1 Physical Education (PE)

PE is defined as a “formal inculcation of knowledge and values through physical activity and/ or experiences” (Davis, Roscoe & Bull, 2005, p.462). Within England and Wales, PE is a core subject within the national curriculum, making it compulsory for school children between early foundation years to school leaver at Key Stage 4 (Laker, 2000). PE and teaching has developed from basic military type drills in the early 19th century to the national curriculum being introduced and making PE a core subject in 1992. This helped create a contemporary view of child-centred learning to achieve fundamental, whole-person aims at present

within PE (Whitehead, 2004). According to the Department of Education (2011) the aim of PE today is for pupils to develop a wide range of skills and develop the ability to use tactics, strategies and compositional ideas. The aims of the national curriculum are to provide a broad PE program, which is aimed at enhancing children's physical, mental and social development (Penney & Evans, 1999; Maher, 2010).

PE is a widely researched topic and carries many debates in what the subject offers pupils and society as a whole (Capel & Piotrowski, 2000). The subject's aims are clearly stated by the NCPE however educational specialists, departments & schools have a professional judgment on how to teach the content (Capel, 2004). These views on how content can be taught can vary from a successful games programme within schools to encouraging pupils to live a healthy lifestyle, which has a strong relationship with PE (See, for example Harris, 1997; Evans & Clarke, 1988; Colquhoun, 1990). Whitehead (1987, 2001) considered these issues and searched for a generic approach to understanding a core goal for PE. Reassessing human conditions in society and the physical components in education allowed the concept of physical literacy to be developed. The next chapter will looks at physical literacy and the components that create the topic.

2.2 Physical Literacy

The concept of physical literacy rethinks attitudes of PE looking at humans as embodied beings, valuing and signifying everything we do (Whitehead, 2010a). The concept starts with looking at the philosophy that the man is 'being in the world' (Whitehead, 1990). The philosophy is based around monism, which doesn't see humans as having two features - mental and physical (Ryle, 1949). It identifies humans as a whole, with every experience we have and every action we take, being influenced by, and influencing all, aspects of our personhood (Whitehead, 2010b). This theory looks at our existence becoming realised and sustained by intimate relationships with the world (Whitehead, 1990). The theory believes humans develop themselves through interaction with everything in the world, this is known as the existentialists philosophy. Whitehead (2001) states that the "richer our interaction in breadth and depth, the more fully realised a human we shall be"

(p.2). Physical literacy combines the philosophy of monists and existentialists to provide the main background for the concept (Whitehead, 2010b).

Whitehead (2001) suggests that the characteristics of a physical literate individual are; “that the person moves with poise, economy and confidence in a wide variety of physically challenging situations. Furthermore, the individual is perceptive in ‘reading’ all aspects of the physical environment, anticipating movement needs or possibilities and responding appropriately to these, with intelligence and imagination” (p.3). Whitehead (2010a) provides the concise definition of physical literacy as being: “appropriate to each individual’s endowment, physical literacy can be described as the motivation, confidence, physical competence, knowledge and understanding to maintain physical activity throughout the life course” (p.12).The attributes of physical literacy motivation, confidence, physical competence and effective interaction with the environment form the concept of physical literacy and are all interlinked and share reciprocal interrelationships with each other (Whitehead, 2010a).

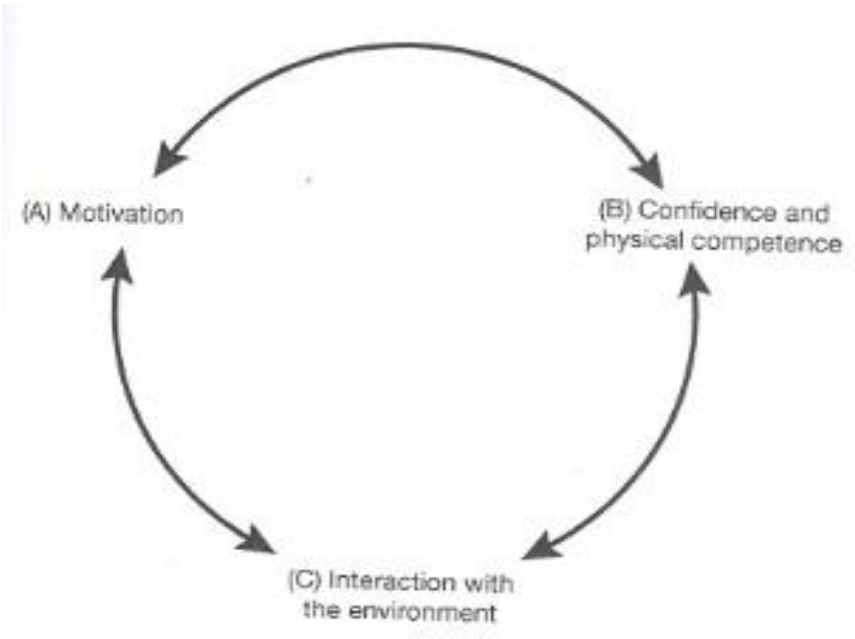

Figure 1. Relationship of the physical literacy attributes
(Whitehead, 2010a, P.15)

As figure 1 shows, each attributes effects each other. If an individual’s motivation is increased this can encourage participation and this involvement within the

activity can enhance confidence and physical competence (Whitehead, 2010a). Whitehead (2010a) also identified that “the development of this confidence and competence can in turn maintain or increase confidence” (p.14). These relationships also work with interactions with the environment, which can enhance confidence and physical competence. Figure 1 shows that, as the key attributes of physical literacy develop other characteristics such as a sense of self and self-confidence, self-expression, communication with others and knowledge and understanding develop (Whitehead, 2010a).

Whitehead and Murdock (2006) discussed the importance of significant others in developing and maintaining physical literacy throughout the life course. These significant others are in positions to provide physical activity, which can help maintain effort or participation in their attitudes towards the pupils. As an individual moves through stages in their life many significant others can help to develop an individual’s physical literacy. Due to the aims of the study and the close relationship between physical activity and physical literacy, I will solely focus on the importance and impact a PE teacher can have on an individual’s physical literacy development. Physical literacy in the context of PE is a goal. Physical activity and PE are vital ‘events’ in obtaining the goal of physical literacy. Work in PE wants to produce physically educated individuals (Whitehead, 2005a). The PE specialist wants the pupils to end secondary education ‘being physical educated’ or ‘being sporty’. This would suggest that what is desired of the pupils is to reach a particular end state, proposing it as elitist (Whitehead, 2005a, 2010a). This indicates that if these end states aren’t reached by a certain age it’s beyond an individual’s reach (Whitehead, 2010a). Physical literacy is a contrast to the view of elitism within PE as it’s a capability that anyone can develop, regardless of age or physical endowment (Whitehead, 2010a).

Physical literacy depends as much, if not more, on the nature of the interaction between the teacher and the pupil, as on the content of the lesson (Whitehead, 2005b). PE teachers as significant others need to make sure that their teaching/interaction with pupils must have motivation at its core if physical literacy is to develop (Haydn-Davies, 2010). Motivation is the key to physical literacy and when it is threatened, other attributes such as self-confidence, self-esteem and

self-respect will decrease and physical literacy will not enhance (Haydn-Davies, 2010). Interaction between the teacher and pupils needs to answer the question: How do I motivate and enable individuals to capitalise on and build from what they can do? Haydn-Davies (2010) stated that to answer the 'what' in the question, pupils need to experience a variety of activities, challenges and opportunities within a physical context. To answer the 'How' the participation is managed, Haydn-Davies (2010) suggested that the climate of the interaction should promote progress in physical literacy. The climate refers to the 'feeling' of the overall interaction and can create motivation within a PE setting (Stathi, Fox & Mckenna, 2002; Ku, Mckenna & Fox, 2007; Haydn-Davies, 2010). As motivation is crucial to physical literacy, achievement goal theory which dominates investigations of motivation within a PE setting (Biddle, 2001) will be discussed in the next chapter to show how motivation is developed by manipulating the climate.

2.3 Achievement Goal Theory

Achievement goal theory suggests that individuals participate in activities such as in a PE environment to show competence or avoid demonstrating incompetence when performing tasks (Nicholls, 1984, 1989). This only occurs within an achievement setting, where individuals feel they are being evaluated (Nicholls, 1989). Duda (1993) expanded on this, incorporating that pupils within PE feel that evaluations of ability, excellence and performance are apparent and noticeable, thus identifying PE as an achievement situation. Nicholls (1989) proposed that there are two ways of recognising competence within an achievement situation like a PE class. How an individual views the concept of ability shapes how they will approach the situation (Dweck & Leggett, 1988; Nicholls, 1989; Ames, 1992a). A task involved individual is focused on task-mastery and self-improvement. Their view of ability is that it comes from effort and perseverance, which will help achieve self-referenced goals (Mastery climate) (Nicholls, 1989; Wang & Biddle, 2003). An ego involved individual is focused on out performing others and comparing their achievements with others, this is to help enhance their social status (Performance climate) (Nicholls, 1989). These individuals perceive ability as being innate with effort having an inversely related effect on ability. Ego involved individuals will often choose to participate in easy task, where they can

use little effort and show competency in the task, particularly when the have low perceived ability at the task (Weigand & Burton, 2002).

Goal orientations and its significance in understanding achievement motivation in sport has been extensively researched (Duda, 1992, 1993; Roberts, 1992; Duda & Hall, 2000). Research has shown that when task orientated goals are set then individuals show more positive attitudes towards PE (Weigand et al., 2001). Research by Newton and Duda (1993) and Duda et al. (1995) has shown that participants become more interested in the sport or activities they become involved in, while have an increased enjoyment for sport. Individuals will also participate for personal reasons, like setting themselves self-referenced goals and have the belief that cooperation and effort will lead to success (Duda & Nicholls, 1992; Duda & White, 1992; Goudas, Biddle, Fox & Underwood, 1995; Walling & Duda, 1995; Boyd & Yin, 1996). According to Ames (1992b) and Nicholls (1984; 1989) achievement goal theory suggests that an individual's achievement incentive can be explained by their achievement goals (task and ego goal orientations), while significant others can manipulate situational factors such as the motivational climate.

2.4 Motivational Climate

An individual's goal involvement (task-ego) can be determined by a combination of goal orientations and situational factors. Motivational climate is, therefore, defined as a situationally induced psychological environment directing goals (Ames, 1992b). Motivational climate in obligatory PE settings has been suggested to be more important than goal orientations in determining achievement goals (Cury et al., 1996; Dorobantu & Biddle, 1997; Spray, 2000). Nicholls (1978) and Nicholls and Miller (1984) proposed that before the age of 12 children haven't matured enough in a cognitive sense and cannot distinguish between luck, difficulty and effort from ability. During this maturational process, children become susceptible and vulnerable to significant others such as parents, sport stars, coaches and teachers (Weigand & Burton, 2002). Throughout this stage children will react to a significant others expectations, demands and rewards. This allows teachers within

a PE environment to place emphasis on effort, cooperation and self-referenced goals, allowing a task involving (mastery) climate to develop.

Many studies within a PE setting (Ames & Maehr, 1989; Seifriz, Duda & Chi, 1992; Treasure, 1993; Treasure & Roberts, 1994, 1995; Papaioannou, 1995, 1997; Solmon, 1996; Carpenter & Morgan, 1999; Christodoulidis, Papaioannou & Digelidis, 2001; Escartí & Gutiérrez, 2001; Weigand et al., 2001; Parish & Treasure, 2003) have shown that a perceived mastery climate is associated with greater feelings of satisfaction, higher desire for self-improvement, less boredom and an increased positive attitude towards PE. Within a mastery climate success is judged as the mastery of a task e.g. learning a new skill or beating a personal best. Achieving a mastery orientation is accessible to all regardless of ability or fitness. Physical literacy links well with mastery orientations as people are on their own journey concerned with personal participation and mastery of tasks (Fox, 2010). In contrast to this an ego involving (performance) climate is associated with greater boredom, a lack of enjoyment, a confidence and belief that ability rather than efforts leads to success and an increased negative attitude towards PE. Fox (2010) identified that in an ego involved climate, where minimal effort is applied to activities, there is a detrimental effect on physical literacy due to decreased perceived importance of the task and low physical competence. Based on this research many motivational researchers suggest that physical education teachers should promote and implement practices that will develop a mastery climate (Treasure & Roberts, 1995; Biddle, 2001; Treasure, 2001). Promoting a mastery climate has been shown to increase many characteristics of Physical literacy e.g. confidence, knowledge and understanding of PE and motivation. With motivation at the heart of physical literacy and a key attribute to enhance other characteristics, ways to increase physical literacy within PE settings can be developed focusing on increasing motivation in PE.

Teacher's behaviours and relationship with students is extremely important in creating a positive motivational environment in PE lessons as it can overrule an individual's tendency for learning (Morgan & Kingston, 2008). Haydn-Davies (2010) also highlighted the importance of teacher's interactions and lesson content in enhancing motivation and promoting physical literacy. PE teachers are

crucial in developing strategies and interventions to manipulate pupils' perceptions of the motivational climate to increase motivation within their lessons. An intervention based around Epstein's (1989) TARGET acronym can be used to enhance motivation in PE and is explained in the next section.

2.5 TARGET

Ames (1992b) suggested that in order to promote a mastery climate an intervention based around (Epstein, 1989) TARGET acronym should be used. The acronym refers to task, authority, recognition, grouping, evaluation and time. Researchers have looked at the effect of a TARGET intervention on participant's perception of their motivational climate. For instance Cecchini et al. (2001) examined the use of TARGET on the cognitive and affective responses to athletics during PE. A mastery climate was linked with enjoyment, increased effort and perceived ability. Morgan and Carpenter (2002) found that they could use TARGET to manipulate the motivational climate to become task involved. The study showed that the participant's satisfaction increased, allowing them to have a more positive attitude towards PE. Further studies found that TARGET was effective in developing a mastery climate, with classes having a positive attitude to become healthier in a response to the environment created (Digelidis, et al., 2003; Barkoukis, et al., 2008). Ames (1992a; 1992b) suggested guidelines when approaching the use of TARGET to help promote a mastery climate:

2.5.1 Task

How task are designed is central to learning within PE. Tasks can be designed to give pupils enjoyment, information and aid them to apply effort within lessons (Ames, 1992a). Tasks need to be purposeful with aims that influence pupil's perceptions. Ames (1992b) suggested that tasks should be designed for self-referenced challenges, interest and variety. Various studies have proved that diverse and challenging task facilitates an interest in learning and in task involvement (Marshall & Weinstein, 1984; Rosenholtz & Simpson, 1984; Nicholls, 1989; Morgan, 2005). Within the context of physical literacy acquiring a wide range of task provides individuals with a range of movement capacities and

movement patterns. This range of task or context provide opportunities for individuals to develop attributes of physical literacy such as motivation, confidence, self-expression and effective relationships with others (Murdoch & Whitehead, 2010).

2.5.2 Authority

The amount of authority a teacher gives to pupils depends on the leadership roles and decision making they are given (Ames, 1992a). Research by Deci and Ryan (1991, 2000), Rigby et al. (1992) and Vallerand (2001) proposes that pupils' perceptions of ability are higher in autonomous-orientated climate. An autonomy-orientated climate is described as pupils' are being involved within the lesson's learning process (Treasure, 2001). Studies such as Ames (1992b) and Grolnick and Ryan (1987) have shown that individual's with high authority during lessons are associated with feelings of self-determination and self-competence.

2.5.3 Recognition

Evaluations and rewards can influence an individual's interests, self-worth and satisfaction (Ames, 1992b). There are varying types of rewards, which can have a detrimental effect on a group. Research from Lepper and Hodell (1989) and Morgan and Kingston (2010) found that public feedback can be more ego-involving on students, ultimately having detrimental effects on a group. However Treasure (2001) found that recognition for accomplishments of progress given privately is likely to foster a mastery-orientated perception of the motivational climate.

2.5.4 Grouping

How individuals are brought together is significant in creating a motivational climate within lessons (Ames, 1992a; Epstein, 1989). Ames (1992a) suggested that forming groups helps individuals to work efficiently with others on task. This

helps establish a climate where individual differences are accepted. Various studies have shown the effect that groupings have on pupils within PE (Johnson & Johnson, 1985; Morgan & Kingston, 2006; Gray, Sproule & Morgan, 2009). Johnson & Johnson (1985) believe that small groups encourage a higher involvement from pupils, which promotes learning because individual's feel like they our being evaluated less.

2.5.5 Evaluation

Ames (1984) proposed that evaluation should be based on self-improvement with focus on individual's goals and effort. This helps facilitate the individuals to be mastery involved. In contrast to this, Nicholls (1989) believed that evaluations which were compared against other individuals had negative effects on the individual, such as harming their self-worth, intrinsic motivation and perceived ability

2.5.6 Time

Utilising time has been shown to significantly influence an individual's motivation (Ames, 1992a; Epstein, 1989). Significant others such as teachers can change the pace of a lesson through instructions and how much time is allotted for tasks and learning activities. Research by Morgan, Sproule & Kingston (2005) reported that in order for pupils to maximise learning and complete task the time structure should maximise learning time and be flexible. Within Physical literacy, breadth and balance are key. Although participants should experience a range of tasks and activities, they should have sufficient time to become familiar with the different setting (Murdoch & Whitehead, 2010). Giving participants time in the context allows them to appreciate the expectations of the teacher and assess the demands and potential satisfaction of the setting and task.

2.6 Rationale of the study

A large amount of intervention based research including Morgan and Kingston (2006), Morgan and Carpenter (2002) and Weigand and Burton (2002) has shown the effect that TARGET structures has on pupils' perceptions of their motivational climate, which in turn affects pupils' intrinsic motivation within PE. Within the concept of physical literacy there have been no studies to measure or promote physical literacy within PE. This study will analyse the relationship between the TARGET structures and the relationships they have with the characteristics of physical literacy. Investigating the TARGET structures will also explore if a specific structure is more prevailing in influencing physical literacy in PE. If the findings show effective structures, interventions can be created to help facilitate physical literacy in PE.

CHAPTER III

METHODOLOGY

2.0 Methodology

The purpose of the methodology is to explain how the study was conducted. The method should be detailed enough for a competent researcher to reproduce the study (Thomas, Nelson & Silverman, 2010). The methods will give a broad and complex explanation of the research design, participants and instruments used within the study, taking into account the reliability and validity of the variables.

3.1 Research Design

Studies involved with motivation traditionally have used quantitative research designs while gathering data. Data is gathered through quantitative methods such as questionnaires and processed and analysed using statistical analysis such as SPSS (Dornyei, 2001). Quantitative refers to the measurement of a particular phenomenon which is numerically analysed (Gratton & Jones, 2010). Large amounts of data can be collected within a short space of time, allowing connections and estimates between variables to be made (Cohen, Manion & Morrison, 2007). Quantitative methods have been extremely successful when used to aid research on motivational climate, in particular studies such as Carello, Rosa, Calvo, Jiminez & Iglasias, (2007), Gilson, Chow and Ewing (2008) and Wang, Liu, Chatzisarantis & Lim (2010) demonstrate this. Due to these reasons this study used solely quantitative methods to conduct the study.

3.2 Participants

A large secondary school within Dorset, south west England was chosen as the researcher was familiar with the school's environment, PE department and had access to the schools gatekeepers. The sample consisted of 235 pupils studying within school years 8-11 (aged 12-16), who were all undertaking core PE. Core lessons within England and Wales are lessons which are mandatory for the school to provide to their pupils. PE is a core subject for key stages 3 and 4. This age group was selected as Nicholls and Miller (1984) suggested that children under the age of 12 couldn't differentiate concepts of ability, task difficulty, luck and effort from ability, which may create the study to be invalid due to the children's

responses being invalid. A stratified random sample was used to select the children for the study. In this, the population is divided (stratified) on some characteristic before random selection of the sample (Thomas et al., 2010). The selection was based on children who undertake core PE and who are older than 12.

3.3 Measures/instruments

To conduct the study three instruments were used the TARGET measure questionnaire developed by Hassan (2011), and the intrinsic motivation inventory (IMI) originally developed by Ryan, Mims and Koestner (1983) modified to measure the components of physical literacy; perceived competence, confidence and motivation.

3.3.1 TARGET Measure Questionnaire

The measure was developed by Hassan (2011) and is a 25 item questionnaire, developed to measure an athlete's perception of their coaches TARGET behaviours within sport coaching. The new measure was created to measure each individual TARGET behaviour, as previous measures of perceived motivational climate have concentrated and focused solely on recognition and evaluation (Morgan & Kingston, 2006). As the questionnaire is developed for a coaching environment, the questionnaire was slightly modified to meet the needs of this study and fit a teaching/physical education environment. To adapt the questionnaire to a PE setting words or phrases which related to a coaching environment were changed and reworded to allow a better understanding for pupils. For example, a word such as 'coach' was changed to 'PE teacher'. The questionnaire measured each TARGET structure with numerous questions related to each individually structure. There are 5 task items (e.g. 'we are encouraged to focus on our own personal improvement'), 5 authority items (e.g. 'the teacher gives us opportunities to make decisions'), 4 recognition items (e.g. 'we are recognised by the teacher for our individual effort and improvement'), 4 grouping items (e.g. 'the teacher regularly changes our groups within and between sessions'), 3 evaluation items (e.g. 'The teacher encourages us to evaluate our

personal levels of improvement and learning') and 4 time items (e.g. 'the teacher gives us the opportunity to progress at our own preferred pace').

The questionnaire used a five point Likert scale, which helped indicate the strength of the responses from the participants (Thomas et al., 2010). The participants' responses are graded along the scale, with 1 being 'strongly disagree' and 5 'strongly agree'. The participants are asked to give their response in relation to the PE lessons they experience. Using a scaled response takes more time to administer but provides more information to the participant's frequency of their specified response (Thomas et al., 2010).

Within research designs, two key concepts, reliability and validity, are used to measure the quality of research. These assess how 'truthful' a piece of research is (Gratton & Jones, 2010). Berg and Latin (2004) state that "validity indicates how well a test measures what is intended to be tested," (p.131). Thomas et al. (2010) define reliability as "the consistency, or repeatability of a measure," (p.197). If a test is not consistent you cannot depend on successive trials to produce the same results, and the test can't be trusted. The TARGET questionnaire is recently developed and still under scrutiny. The instrument is relatively innovative within the use of a physical education environment, leaving its validity and reliability unidentified, which may perhaps be a possible limitation of the study. Kothari (2004) claims that a Likert scale increases the reliability of the instrument due to participants answering every statement in the questionnaire.

3.3.2 IMI (Physical literacy questionnaire)

The original Intrinsic Motivation Inventory is used to assess participants subjective experience related to a specific situation. It has been used in several experiments related to intrinsic motivation and self-regulation (e.g., Ryan, 1982; Plant & Ryan, 1985; Ryan, Connell, & Plant, 1990; Ryan, Koestner & Deci, 1991; Deci, Eghrari, Patrick, & Leone, 1994). The IMI uses a 7 point Likert scale for responses to be measured with 6 subscales. The 6 subscales measure responses related to participants' interest/enjoyment, perceived competence, effort, value/usefulness, felt pressure and tension, and perceived choice while performing a given activity.

McAuley, Duncan, and Tammen (1989) examined these 6 sub scales and found support for their validity, giving backing for using the IMI within the study.

The intrinsic motivation inventory used within the study is modified, looking at 5 subscales related to physical literacy. Within the questionnaire the Interest/Enjoyment and Effort/Importance were included due to their assessment of perceived intrinsic motivation, a key attribute within physical literacy (Whitehead, 2010a). The perceived confidence subscales is used due to it measuring perceived intrinsic motivation and confidence in specific situations, while the pressure/tension subscale measures their perceived negative impact of the lessons. The self-confidence/knowledge/understanding subscales measures the participants' confidence and their knowledge within their PE lesson. The physical literacy questionnaire only measures the subscales related to the components which make physical literacy (motivation, confidence, competence and knowledge and understanding).

3.4 Procedure

In order for the study to begin, approval had to be granted by Cardiff metropolitan university's ethical research committee. The study followed guidelines and ethical considerations laid down by the university's ethics committee. These considerations were required due to the study involving a large sample of under 16s. As a vulnerable population was used in the study, many considerations had to be followed, such as, having an up to date Criminal Records Bureau (CRB) certificate. Once ethical approval was granted by the university's ethics committee an email was written to the headmaster of the school explaining the study, in which permission was granted for the study to take place in the school. Further emails and research information (Appendix A) were sent to the head of the physical education department, in which the study was discussed and dates were agreed for a meeting to outline the study. Permission was granted with the headmaster and head of physical education, allowing pupils to participate in the study. The Head teacher was requested to complete a certificate of consent (Appendix B) to allow the pupils to participate in the study. The study didn't involve

an intervention or invasive methods, while questions were unlikely to cause discomfort to pupils.

3.5 Pilot study

A pilot study was undertaken prior to the data collection for the main study. Five year 8 students aged 12 from a football development centre were used after a coaching session. Children aged 12 were selected for the study, as this was the youngest age of the pupils who would participate in the main study. The small scale preliminary procedure was used to test the instruments within the study and adjust any issues which occurred (Gratton & Jones, 2010). Amendments which are observed within the pilot study help to produce a more reliable and valid instrument for use with the main research (Thomas et al., 2010). The pilot study didn't produce any observed adjustments to be put forward for the main study. The pilot study can be vital to the research as it helps govern the usefulness of the instruments, while gives the researcher experience of administering the questionnaires (Thomas et al., 2010). The pilot study helped determine the time required to complete the questionnaires, and learn if the questions were easy to understand and suitable for school pupils (Cohen et al., 2007). The pilot study used the same format as the main study, however the participants were told to highlight any areas which weren't clear by marking them on the questionnaires. The researcher also timed how long the questionnaire took the participants to complete. This deemed the length of the study, and if any questionnaires needed shortening.

The main findings of the pilot study were that the average total time to complete the questionnaire book was between 12-17 minutes. Other findings included some questions on the TARGET questionnaire needed changing and simplifying, as questions were too hard to understand or read. Changing these questions helped increase the reliability of the study as pupils wouldn't misjudge the meaning of the questions and provide untrue answers (Kumar, 2005).

3.6 Data Collection

The data was collected over five days in which 235 pupils completed the questionnaires. The pupils were given a questionnaire pack, containing the TARGET questionnaire (appendix C), physical literacy measure (appendix D), and instructions on how to complete the measures were also included (appendix E), with information regarding the research. The information sheet protected their confidentiality, as they didn't need to provide any information about themselves. The questionnaires were completed within 15 minutes after their physical education lesson. The questionnaires were filled out within a 'classroom like environment' situated in the foyer of the sports facilities or within a classroom. The environment allowed the pupils to complete the questionnaires while in a quite seated area. The researcher and PE teacher supervised the pupils as they filled the questionnaires. All questionnaires were collected by the researcher ready to be used for analysis. The process was repeated over five days with years 8-11.

3.7 Data Analysis

The collected data was analysed using Statistical Package for the Social Sciences 20.0 (SPSS), using the responses from the 235 participants' TARGET and IMI questionnaires. A data file composed of all the responses was created and readied for analysis. Certain responses within the TARGET measure questionnaire (Rec1, Group3, Eval2, Time3 and Auth5) and physical literacy questionnaire (Enjo2 and Press3) were negatively worded, to maintain consistency across the subscales (Ntoumanis, 2001a). The selected items had to be recoded using SPSS to allow reliable data analysis. As the research looked at the relationship between TARGET structures and Physical Literacy, a multiple regression analysis was used on the subscales of the TARGET and physical literacy questionnaires. Thomas et al. (2010) define this analysis as "a statistical technique used to determine the relationship between two or more variables" (p.125).

As the TARGET measure is a fairly new instrument, it was firstly important to test the reliably of the questionnaire by looking if it yielded the same results on

successive trials. Each of the 6 TARGET variables was measured using the coefficient alpha technique (α) (Cronbach, 1951). The coefficient alpha technique was used as it can estimate reliability in tests such as the Likert scale in the TARGET questionnaire (Thomas et al., 2010). A Cronbach's α of between .70 to .90 was critical to demonstrate good internal consistency (Ntoumanis, 2001a). The reliability of the physical literacy questionnaire was also tested using the Cronbach's alpha technique.

Before multiple regression analysis could be conducted, Tabachnick and Fidell (1996) and Field (2009) identified a number of assumptions which parametric test needs to meet (Appendix F & G). A parametric test is a statistical test that depends on an assumption about the distribution of the data (Field, 2009). Firstly the ratio of participants to independent variables (TARGET structures) should be at least 5:1. The data collected gives a ratio of 39.1 participants to each TARGET structures. If a small sample size is used within multiple regression analysis, it's possible for the results to not generalise other samples. Secondly multiple regression analysis requires the predictor variables and the outcome variables to be quantitative in nature. Within the study, the TARGET subscales and components of physical literacy, are both measured with numerical Likert scales, showing the data's quantitative nature. The next assumption requires homoscedasticity within the data. This assumption means that the variance of one variable should be constant throughout. Furthermore the predictor variables (TARGET subscales) should not display perfect linear relationships between the TARGET subscales. The last assumption requires the 5 physical literacy subscales to be independent from one another. This is also required for the TARGET subscales. Meeting these assumptions before employing multiple regression analysis allows generalisation to the sample and among wider populations (Tabachnick & Fidell, 1996; Field, 2009).

Multiple regression analysis is a logical extension of a simple linear regression, due to their being several predictor variables. The equation for multiple regression calculates the outcome variable (physical literacy characteristic) (Y), by multiplying the predictor variables (TARGET structures) (X_1, X_2…) by their own coefficient (b_1, b_2…) plus a residual item ($_i$). There are several methods for carrying out a

regression analysis. However the research used the *Enter* methods, which assess the predictive ability of the independent variables simultaneously (Tabachnick & Fidell, 1996).

CHAPTER IV
RESULTS

4.0 Results

This chapter presents the results of the statistical analysis performed in SPSS, while providing a thorough explanation of the results in relation to the aims of the study. Firstly, the results on the Cronbach's alpha analysis will be reported, discussing any implications this has on the study and the effects this has on further analysis. Secondly, the results of the multiple regression analysis will be displayed and described.

4.1 Reliability Analysis

Prior to performing multiple regression analysis on the raw data, reliability analysis was conducted on the separate subscales from the TARGET and physical questionnaires to establish if the variables were internally consistent and if there was homogeneity between the variables (Ntoumanis, 2001a; Vincent, 1999). A Cronbach's alpha (α) score of between 0.7 and 0.9 is described as ideal. A low alpha (α) score shows poor internal consistency, due to the items in the scale being poorly related to one another. A very high alpha (α) of above 0.9 indicates that the items are almost identical (and perhaps redundant), therefore the generic meaning of the scale is too narrow (Ntoumanis, 2001a). Ntoumanis (2001a) identified that the number of items within a scale can affect the size of the alpha coefficient. As the number of items within a subscale decreases, α generally decreases (Field, 2009). The 5 subscales within the physical literacy questionnaire consisted of 3 or 4 items, while the TARGET measure ranged from 3 - 5 items. Therefore subscales consisting of fewer items were expected to produce lower α score's.

4.1.1 Physical Literacy Questionnaire

Table 1**.** Cronbach's alpha's for physical literacy questionnaire

Subscale	N of items	Cronbach's α
Enjoyment	4	.88
Pressure/Tension	4	.65
Perceived Competence	3	.82
Importance	3	.89
Self Confidence	4	.89

Internal reliability analysis of the items within the physical literacy questionnaire illustrates that there is good internal consistency between the enjoyment, perceived competence, importance, self-confidence and pressure subscales. The pressure subscale shows an alpha score of 0.65 however can be rounded up to 0.7, deeming it acceptable to be used for multiple regression analysis.

4.1.2 TARGET Measure Questionnaire

Due to the TARGET measure questionnaire (Hassan, 2011) being a fairly new instrument and not previously used with a physical education context, reliability analysis was vital to check for internal consistency in the subscales. The Cronbach's alpha scores can be viewed in table 2 below.

Table 2. Cronbach's alpha for TARGET measure questionnaire

Subscale	N of items	Cronbach's α
Task	5	.70
Authority	5	.64
Recognition	4	.73
Grouping	4	.44
Evaluation	3	.22
Time	4	.66

Internal reliability analysis shows that the task, authority, recognition and time subscales were internally consistent. The grouping and evaluation subscales contained significantly weaker internal consistency.

Ntoumanis (2001a) suggested detecting any problematic items within the subscales and deleting and removing them from the analysis to change the Cronbach's alpha score. Further analysis using this technique will be administered on the authority and time subscale due to them being just under 0.7 on the alpha score.

Table 3. Cronbach's alpha scores if item deleted for authority subscale

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Cronbach's Alpha if Item Deleted
Auth1	13.94	5.78	.56
Auth2	13.98	7.01	.68
Auth3	13.72	5.81	.54
Auth4	13.87	5.56	.62
Auth5	13.96	5.20	.54

After further analysis the results show that if the item Auth2 'we are encouraged to accept positions of authority' is removed for the subscale there is an increase of 0.04 of the alpha score. Due to these finding the researcher decided to omit Auth2 from the subscale leaving the final Cronbach's alpha score for authority at 0.68.

Table 4. Cronbach's alpha scores if item deleted for Time subscale

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Cronbach's Alpha if Item Deleted
Time1	9.79	3.40	.50
Time2	9.82	3.34	.53
Time3	10.66	4.30	.79
Time4	9.82	3.12	.46

The table above shows if the item Time3 ‘the teacher dictates the time we spend on each task’ is deleted the Cronbach’s alpha score increases by 0.13. This increased the Cronbach’s alpha score to 0.79. Due to these findings the researcher decided to
omit the item Time3 from the subscale.

After further analysis looking at deleting items within the grouping and evaluation subscales it was evident that their internal reliability was too low and couldn’t be manipulated to fit the study. After this analysis the researcher decided to omit the grouping structure from the study.

Ames’ (1992a) reported combing several structures when looking at how pupils’ perceptions of achievement are affected by classroom structure. Due to the similarities between the recognition and evaluation structures it seemed acceptable to join the structures and create a subscale consisting of 7 items. Combining the subscales produced a Cronbach’s alpha score of .72.

After manipulating the TARGET structures to help with the main analysis the final structures put forward were task (n = 5, α = .70), authority (n = 4, α = .68), Time (n = 3, α = .79) and recognition-evaluation (n = 7, α = .72), where n represents the number of items within the subscale.

Table 5. Descriptive statistics of TARGET structures

	Minimum value	Maximum value	Mean of combined items	Std. Deviation
Task	7	25	18.3	2.80
Authority	11	25	17.4	3.34
Time	7	19	13.4	2.38
Recognition & Evaluation	10	31	23.3	4.26

Table 6. Descriptive statistics for physical literacy attributes

	Minimum value	Maximum value	Mean of combined items	Std. Deviation
Enjoyment	8	28	22.1	4.91
Perceived competence	5	21	15.6	3.80
Importance	3	21	15.8	4.42
Recognition & Evaluation	10	31	23.3	4.26

4.2 Multiple Regression Analysis

With the final data, multiple regression analysis was implemented on the predictor variables (perceptions of task, authority, time and recognition-evaluation) looking at their relationship with the dependent variables (components of physical literacy; enjoyment pressure/tension, perceived competence, importance and self-confidence).

4.2.1 Enjoyment

After performing multiple regression analysis on the dependent variable of enjoyment, the R^2 value recorded .34. The R^2 value shows the proportion of variance in the dependent variable (Enjoyment) which can be explained by the independent variables (Task, authority, time and recognition-evaluation). This shows that the selected TARGET structures statistically account for 34% variance in the perceived enjoyment of pupils within PE.

Table 7. Summary of multiple regression analysis of TARGET variables for predicting perceived enjoyment

	B	SE	Beta (β)	*T*	Sig.
Task	.24	.12	.14	2.00	.05*
Authority	.13	.11	.07	1.14	.257
Time	.35	.14	.17	2.50	.01*
Recognition & Evaluation	.38	.08	.33	4.39	.00*

*Significant at the 0.05 level

Table 7. Shows that the β values were all positive showing that all the predictor variables had a positive relationship with enjoyment. For example Recognition-evaluation produced a B value of .34. This shows that with every unit increase in this structure there is a .34 increase in perceived enjoyment in PE. Task, time and recognition-evaluation all were found to be significant predictors of enjoyment within PE. Analysis of the results shown that recognition-evaluation had more impact on enjoyment then the other structures.

4.2.2 Perceived Competence

The predictor variables (task, authority, time and recognition-evaluation) accounted for 25% (R^2 = .25) of the variance with relation to predicting the dependent variable (perceived competence).

Table 8**.** Summary of multiple regression analysis of TARGET variables for predicting perceived competence

	B	SE	Beta (β)	*T*	Sig.
Task	.20	.10	.14	2.01	.05*
Authority	.11	.09	.08	1.19	.24
Time	.19	.11	.12	1.70	.09
Recognition & Evaluation	.24	.07	.26	3.29	.00*

*Significant at the 0.05 level

The table above shows that task (B = .20) and recognition-evaluation (B = .24) have positive relationships with perceived competence. Task (β = .14, p = 0.05) and Recognition-Evaluation (β = .26, p = .00) were significant predictors of perceived self-competence within PE.

4.2.3 Importance

The predictor variables (task, authority, time and recognition-evaluation) accounted for 30% (R^2 = .30) of the variance with relation to predicting the dependent variable (perceived importance).

Table 9. Summary of multiple regression analysis of TARGET variables for predicting perceived importance within PE

	B	SE	Beta (β)	*T*	Sig.
Task	.44	.11	.27	3.95	.00*
Authority	- .24	.10	-.16	-2.38	.02*
Time	.25	.13	.14	1.97	.05*
Recognition & Evaluation	.35	.08	.33	4.29	.00*

*Significant at the 0.05 level

Table 9 summaries the direction and significance of the selected TARGET structures on perceived importance. Perceptions of task, time and recognition-evaluation were all found to have a positive significant relationship with perceived

importance. Perceptions of authority also had a significant although inverse relationship with perceived importance within PE. When authority increased by 1, unit perceptions of enjoyment reduced by 24. This is due to its coefficients being negative (β = -0.24, p = 0.02).

4.2.4 Self Confidence

The predictor variables accounted for 38% (R^2 = .38) of the variance with relation to predicting the dependent variable.

Table 10. Summary of multiple regression analysis of TARGET structures for predicting perceived self confidence

	B	SE	Beta (β)	*T*	Sig.
Task	.54	.13	.28	4.32	.00*
Authority	- .06	.12	-.03	-.49	.63
Time	.21	.15	.10	1.47	.14
Recognition & Evaluation	.46	.09	.37	5.03	.00*

*Significant at the 0.05 level

The table shows that task and recognition-evaluation a positive relationship in predicting perceived self-confidence within a PE setting. The TARGET structures were found to be significant predictors of perceived self-confidence (t = 4.32, p = .00) and (t = 5.03, p = .00) respectively. The other structures didn't produce significant relationships with perceived self-competence.

4.2.5 Pressure

The predictor variable accounted for 15% (R^2 = .15) of the variance with predicting the pressure variable.

Table 11. Summary of multiple regression analysis of TARGET structures for predicting perceived pressure

	B	SE	Beta (β)	*t*	Sig.
Task	.32	.12	.21	2.74	.01*
Authority	- .07	.11	-.05	-.65	.52
Time	- .48	.14	-.27	-3.58	.00*
Recognition & Evaluation	- .24	.09	-.23	-2.75	.01*

*Significant at the 0.05 level

Table 11 shows the task to be a significant predictor of predicting pressure within a PE setting. The table above shows the time and recognition & evaluation structures to be significant negative predictors of the pressure subscale.

CHAPTER V
DISCUSSION

5.0 Discussion

This study aimed to further knowledge in relation to physical literacy, while looking at the TARGET structures (Epstein, 1989) to see if they related to physical literacy within the context of PE. Predominantly, this study examined pupil's perceptions of the TARGET structures to determine if they were predictors of the individual components of physical literacy. Secondly, this study explored whether the perception of one TARGET structure was more dominant in predicting the individual characteristics of physical literacy, and physical literacy as a whole entity. This chapter provides a detailed explanation of the results attained, with particular focus on linking the findings to the aims of the study and its association with current literate. Furthermore, the results will be discussed in relation to their impact on PE, the curriculum and teaching. Finally, the practical and methodological limitations of the research will be highlighted and explained, giving areas for possible future research to be examined. The chapter will be organised according to the physical literacy components, beginning with enjoyment, perceived competence, importance, self-confidence and finally pressure/tension.

5.1 Physical literacy components

5.1.1 Enjoyment

The results of the study show that the task, time and recognition-evaluation structures were all significant predictors of pupils' perceived enjoyment within physical education. Many studies such as Scanlan and Simons (1992), Bandura (1997), and McAuley, Jerome, Marquez, Elavsky & Blissmer (2003) and have shown that self-efficacy has a large influence on enjoyment in sport. Self-efficacy within pupils can be increased by manipulating the task the pupils undergo. The study showed that when there was a high perception of mastery focused tasks (Ames, 1992a) used within lessons, pupils perception of enjoyment increased. Manipulating the task by letting the children set themselves mastery goals increases the pupil's enjoyment (Dishman et al., 2004). This increases the children's goal attainment due to the goals being self-referenced, which can raise self-efficacy and enjoyment towards PE. The results are similar to Whitehead

(2005b) explanation of increasing enjoyment in PE, thus endorsing physical literacy by allowing pupils to experience mastery within schools. This provides support for literature as it suggests that teachers can encourage pupils to set achievable self-referenced goals, while providing differentiation of tasks to keep children engaged, raise motivation, increase enjoyment while also creating a mastery-oriented climate (Gower, 2004; Murcia, Coll & Perez, 2009;).

The study found that pupils perceptions of recognition & evaluation was the most significant subscale in predicting perceived enjoyment. Cognitive Evaluation Theory (CET) (Deci & Ryan, 1985) can be linked to how recognition & evaluation influences enjoyment and intrinsic motivation with the context of PE. CET looks at how motivation varies according to changes in perceptions of competence. Perceptions of competence are changed though appraisals and informational events thus enhancing intrinsic motivation. The appraisals or autonomy support can be task involving for pupils and leads to intrinsic motivation and is essential to a mastery-orientated climate (Ryan, 1982; Nordin-Bates, Quested, Walker & Redding, 2011). This supports Ames (1992a) notion that when evaluation and recognition is given privately and not based on normative results, a mastery-orientated climate is perceived. A high perception of a mastery climate has been shown to increase enjoyment, satisfaction and attitudes towards PE (Escarti & Gutierrez, 2001; Ntoumanis, 2001b, 2002; Parish & Treasure, 2003; Standage, Duda & Ntoumanis, 2005).

Morgan et al. (2005) found similar results in the case that the recognition-evaluation was the most prominent predictor of a mastery-orientated climate. This provides teachers with significant structures and methods of using recognition and evaluation within lessons to promote physical literacy. The results suggest that in order to raise pupils' perceived enjoyment within lessons, teachers should use positive feedback relating to task-orientation which is based on effort and self-improvement, while limiting ego-orientated feedback such as judging pupils on normative comparisons. Increasing enjoyment within lessons has been associated with self-reported physical activity during leisure time (Chatzisarantis & Hagger, in press) and the decision to enrol in PE as an optional subject (Ntoumanis, 2005). Previous research within sport (Ames & Archer, 1988; Seifriz et al., 1992;

Treasure & Roberts, 1994) and PE (Morgan & Carpenter, 2002) has shown that a mastery climate is associated with significant increases in people's satisfaction and the enjoyment they experience.

Multiple regression analysis also showed time to be a significant predictor of enjoyment within PE. The time within PE lessons should be sufficient and flexible, allowing pupils to develop and complete tasks at their own pace (Epstein, 1989; Ames, 1992a; Morgan et al., 2005). PE lessons are restricted by fixed time periods, which make it hard to allow pupils to control the pace of the lesson due to the variance of ability's within a class. Teachers can structure lessons and tasks to allow the inclusion of everyone in the class to master their own personal challenges within PE.

5.1.2 Perceived Competence

Multiple regression analysis of the task structure displayed that it was a significant predictor of perceived competence within PE. CET can be used to help explain the effects which task has on perceived competence. To raise competence with PE, the task structure has two components, an emphasis on mastery goals and a variety/differentiated approach to tasks (Rosenholtz & Simpson, 1984; Ames, 1992a). When one of both of these approaches is used it has been found to increase perceived competence. CET proposes that perceived competence effects intrinsic motivation. This in turn produces feelings of enjoyment and interest, which is vital for physical activity participation and an adherence to physical activity and possibly remaining physically literate throughout the life course (Deci & Ryan, 1985, 2000).

The Recognition and evaluation subscales were also found to be a significant predictor of perceived competence with PE. This supports various studies such as Deci (1971, 1972), Deci, Cascio and Krusell (1975) and Nicaise, Cogerino, Bois, and Amorose (2006), who findings show how positive feedback which isn't based on normative standards results in more intrinsic motivation due to increased perceived competence. This study suggests that when recognition is given privately, negative effects on individual's perceptions of self-competence are

avoided. Haydn-Davies (2010) suggested that teachers need to focus their attentions on the development of self-esteem, self-competence, self-confidence and self-respect within PE. When any of these are threatened, motivation will decreases, commitment to participate will deteriorate, resulting in physical literacy not being established or enhanced. This highlights the need to develop self-competence within lesson, by using mastery based tasks and mastery based recognition and evaluation.

Research has constantly shown that people, who report high levels of self-competence, are more likely to be physically activity (Fox, 2010). This is crucial for educationists to realise, as teachers need to build and develop physical self-perceptions, such as self-competence, in order to influence engagement in physical activity throughout life. Pupils who are 'skill-rich' become richer and the 'skill-poor' become poorer, due to a lack of self-competence (Fox, 2010, p.78). This study suggests that self-competence can be developed by manipulating the tasks, recognition and evaluation in a mastery sense.

5.1.3 Importance

Multiple regression analysis found that task, authority, time and recognition-evaluation structures are significant in predicting perceived importance with pupils in PE. Pupils' perceived importance within PE can be linked to the physical literacy characteristics of enjoyment and perceived competence. According to Deci and Ryan (2000) to help promote intrinsic motivation thus improving enjoyment, importance and perceived competence three psychological needs should be fulfilled; autonomy, competence and relatedness. Autonomy is our need to experience life as self-endorsed with the urge to choose what we experience (deCharms, 1968; Deci, 1975). Competence is our need to interact effectively with the environment, seek control of results and experience mastery (White, 1963; Harter, 1978). Relatedness is the need to feel connected, close and cared for by significant others (Reis, 1994; Baumeister & Leary, 1995). Within the context of PE these needs can be fulfilled by using the TARGET structures to help enhance certain characteristics of physical literacy.

Teachers can help fulfil these psychological needs by providing tasks which help pupils experience mastery of skills, thus endorsing and enhancing competence. Autonomy can be accomplished by allowing pupils time to progress and master tasks at their own pace, allowing them to have choice within they PE experience (Hagger & Chatzisarantis, 2005). Relatedness can be achieved with teachers giving pupils valuable and significant recognition and evaluation that is given privately and focused on task mastery (Shen, McCaughtry, Martin, Fahlmann, & Garn, 2012).

Physical literacy should be a rewarding process which motivates pupils to continue with physical activity when they leave school (Whitehead, 2005a). Larson (2000) stated that children will participate and become interested in physical activity, due to them enjoying the tasks they are involved in. Teachers can raise this interest and enjoyment by making pupils aware of the benefits physical activity has on individuals, such as health and academic achievement (Marsh & Kelitman, 2003). Teachers who involve pupils and educate them about physical activity may help develop another attribute of physical literacy, such as knowledge and understanding (Whitehead, 2010a). Pupils should leave education with attitudes that value the importance of physical activity. PE teachers are a crucial aspect of helping students release the importance of physical activity. Young people within education are still in the process of forming their own value system, making the structure of the curriculum, teachers and PE extremely important.

5.1.4 Self Confidence

The results revealed that task and recognition-evaluation subscales were significant predictors of pupil's perceived self-confidence within PE. Within the context of physical literacy self-confidence is enhanced due to the self-realisation that is felt through experiencing success (Whitehead, 2005b). As mentioned before manipulating the task structure helps aid success within PE due to self-referenced goal attainment. While the study also highlights that pupil's perceive to fulfil their physical capabilities, when they receive mastery based feedback. This helps them experience success, thus enhancing self-confidence.

It is believed that self-confidence is also enhanced when individuals have interactions and relationships with the world (Whitehead, 1990; 2010a, c). When experiences with the environment during PE are positive, effective, reinforced and recognition is giving for improvement, self-confidence is developed (Grogan, 2008; Gallagher, 2005). Teachers can use differentiated tasks for different environments to produce increased levels of self-confidence within pupils (Whitehead, 2010c).

5.1.5 Pressure

Pressure and tension is seen as a negative predictor of intrinsic motivation (Ryan et al., 1983). The study found that the task structure was a predictor of perceived pressure, thus a predictor for negative experiences of intrinsic motivation. Time and recognition-evaluation were found to be significant negative predictors of perceived pressure, thus significant predictors of intrinsic motivation.

Feelings of pressure within PE can be due to low self-esteem (Fox, 2009). Low self-esteem can bring upon feelings of shame and hopelessness. Within achievement settings like a PE class (Nicholls, 1984, 1989), the effects of a low self-esteem give pupils little intrinsic motivation to show competence or avoid showing competence as they feel pressure and tension within the task they have to perform. Teachers need to ensure that pupil's self-esteem is raised within lessons. Teachers and the national curriculum need to move away from an activity centred performance model, to a person centred participation model (Whitehead, 2005a). This would make PE more inclusive and have an overall mastery focus, which helps goal attainment making pupils remove these feelings of hopelessness, thus feeling less pressure within lessons.

Due to recognition & evaluation being seen as a negative predictor of pressure, teachers can use it as a tool to intrinsically motivate pupils. Stathi et al. (2002) identified that in order to experience well-being and remain intrinsically motivated, humans need to feel they are learning, developing and growing in terms of their abilities. PE pupils can feel they are developing in a mastery sense by being assessed in a number of ways. Assessment for learning (Black, Harrison, Lee, Marshall & Wiliam, 2003) can be implemented within lessons through the use of

questioning to help pupils evaluate themselves against their own self referenced goals. When questioning pupils the TARGET structure time can be used, to help them evaluate themselves and feel less pressure within lessons. When using questions to evaluate pupils, extending the 'wait time' for an answer, will provide pupils more time to become engaged within the lesson. This provides a supportive climate for pupils, allowing them to feel more comfortable (Rowe, 1972, 1974; Black et al., 2003).

5.2 Key Findings

A key finding of the study was that a mastery task structure was seen as a significant predictor of all the physical literacy subscales. This is crucial for PE specialist as it highlights the need for tasks to be planned effectively, engaging pupils in crucial learning and skill development (Gower, 2004). When tasks are planned effectively, information can be implanted within, allowing pupils to engage, helping them to improve their satisfaction and ability within lessons (Ames, 1992c). Drawing on these findings and existing literature, manipulating tasks to make them mastery based and differentiated throughout can be used by teachers to enhance and promote physical literacy within lessons.

Another significant finding of the study was that recognition and evaluation was a significant predictor of all the attributes of physical literacy. The recognition and evaluation was also the most influential TARGET structure on all the physical literacy attributes. Morgan et al. (2005) found similar results when researching the effects teaching behaviours had on a motivational climate. Recognition and evaluation was found to be the most prominent structure in predicting a perceived mastery climate. This indicates significant teaching methods to help promote physical literacy within the national curriculum by structuring the recognition and evaluation pupils receive in PE. Murcia et al. (2009) states that PE teachers should deliver feedback based on pupil's effort and self-improvement, limiting comparisons between the class. Murcia et al. (2009) expands on this by highlighting that pupils' self-perceptions will be facilitated and developed if feedback is implemented in this way while their perceptions and appraisals of PE will also be raised.

The study was consistent with Whitehead (2010a) publication showing the relationships and interactions between the attributes of physical literacy. With motivation at the heart of physical literacy, the attributes measured (except pressure) in the study all support intrinsic motivation towards PE. Whitehead (2007) suggested that self-competence or movement competence is the first building block or physical literacy and helps improve other attributes of physical literacy. Motivation will be enhanced when individuals make progress in respect of their own skill development, enabling them to feel competent. Enhancing competence increases confidence and self-esteem (Whitehead, 2012a, e). Increased self-esteem raises enjoyment within PE, which increases pupils' satisfaction and overall interest in the subject (Whitehead, 2010e). The relationships the physical literacy attributes have with one another needs to be taken in to consideration when interpreting the results of the study. For example Whitehead (2010a) stated that when self-confidence is being developed, the relationship it has with self-competence causes this to also increase. The relationship which a TARGET structure has with a specific physical literacy subscale may cause the attribute to develop, however other physical literacy attributes may develop indirectly due to the relationships each attribute has with on and other, not due directly to the TARGET structure.

To summarise the key findings of the study, the TARGET structures of task, authority, time, recognition and evaluation all were found to be significant predictors of physical literacy within PE. The research also found task and recognition-evaluation to be the most substantial predictors of physical literacy, thus suggesting that they should be used within education settings in order to promote physical literacy.

CHAPTER VI
CONCLUSION

6.0 Conclusion

The study has made a small but valuable contribution, to a developing area of research that has lacked attention to date. A large amount of research focusing on physical literacy has proposed the value and importance of motivation in developing physical literacy. Physical literacy has been linked to theories which can explain behaviour within PE settings, such as achievement goal theory (Nicholls, 1989), self-determination (1985, 1991, 2000) and cognitive evaluation theory (Deci, 1975; Deci & Ryan, 1985). However, there's been little or no research to provide evidence to support motivation being an inhibitor of physical literacy as a whole concept. Some of the findings within the study were anticipated, which may provide an explanation why there have been no empirical studies on the subject. However the study discovered certain results which justify the importance of the research and its importance to the development of physical literacy within PE.

To summarise in relation to the study's aims, the results demonstrate that pupils' perceptions of mastery task and recognition-evaluation structures are significant predictors of all the physical literacy attributes. The TARGET structures of authority and time were also found to be less influential predictors of enjoyment, importance and pressure. When explaining these findings in relation to Whitehead (2010d), Fox (2010) and Haydn-Davies' (2010) the results appear theoretically sound. If teachers aim to promote physical literacy within their PE lessons, then these findings suggest that emphasis should be placed on manipulation of the task and recognition-evaluation structure with a mastery focus to enhance the development of physical literacy.

6.1 Limitations of the study

The study needs to also identify its limitations. Due to the sample being collected from one school, the results cannot be generalised to all populations of children who undertake PE. The sample being drawn from one school and using 235 participants makes it impossible to draw absolute conclusions from the study. To generalise the results more broadly, data should be collected from a range of

schools across England and Wales, however this would require more time and resources to gather larger amounts of data.

Using questionnaires within the study provides pupils the tendency to answer questions for social desirability. Social desirability is pupils answering questions which are seen as respectable rather than their true response (De Vaus, 2002). As a PE teacher was present during the data collection, some pupils may have presumed their response were available to their teacher. This may have caused them to record answers, which were socially desirable, even though it was stated that the questionnaires were only available to the researcher making the study ethically sound.

After Cronbach's alpha analysis of the TARGET measure questionnaire, not all the structures were valued as acceptable for multiple regression analysis. This didn't allow all of the aims of the study to be completely met, highlighting the need for a reliable and internally consistent measure to be created. The measure would need to be able to measure all the TARGET structures in PE. The physical literacy questionnaire (IMI) was a new instrument in the sense in hadn't been used in the context of measuring physical literacy in PE before. Although the measure was deemed internally consistent between items, not all the attributes of Whiteheads (1990) physical literacy definition were measured. Effective relationships with the environment and pupil's knowledge and understanding on physical activity weren't measured within the questionnaire used in this study. This highlights that the physical literacy questionnaire developed doesn't provide a comprehensive measure of all the attributes of physical literacy. A further research project would be to create a complete measure of physical literacy for a PE setting.

Using regression analysis within the study didn't allow the researcher to identify the directional effect of the predictor valuables on physical literacy as the results are purely based on the relationships between the variables. Therefore, some findings may be due to cause and effects between the variables, a change in one physical literacy attribute may cause a change within another attribute of physical literacy. This shows that there is little evidence to conclude that perceptions of TARGET structures cause perceptions of physical literacy to develop.

6.2 Further research

A key theme emerging from this study is the need for further research to be conducted within physical literacy. The research provided potential positive behaviours central to motivation, which can impact on PE as a whole. The literature review showed links between motivation in PE and how it can be used to foster physical literacy within PE. However there have been little or no empirical studies to show motivations importance and relationship with physical literacy. More studies focusing on providing evidence to support using motivation as a tool to facilitate the development of physical literacy are required. Furthermore, there is a need to target research within the context of PE, such as using intervention studies to develop physical literacy for example using curriculum planning to improve physical literacy within schools (Murdoch & Whitehead, 2010).

If physical literacy is going to be used within education settings, studies need to try and establish a proven system to chart the progress and development of physical literacy within PE. A recognised assessment *for* learning system for teachers, would give physical literacy more value and significance within education settings. Recording physical literacy would give pupils goals and target for attainment, while helping create a mastery climate for the pupils.

There is also a need for conducting longitudinal studies to verify the claims which the concept of physical literacy proposes. Research needs to address issues such as investigating if physical literacy promotes participation in physical activity throughout the life course, and if physical literacy promotes fluent self-expression and emphatic interaction with others (Whitehead, 1990, 2010a). Conducting research of this nature would provide important information which could provide a stronger rationale to promote physical literacy and make it a key area for the government, PE specialists and primary teachers to focus on in the future.

CHAPTER VII
REFERENCE LIST

7.0 Reference List

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APPENDICES

APPENDIX A

HEAD TEACHER & HEAD OF PE INFORMATION SHEET

Researcher: Aiden Perrett

Title of project: Investigation of the relationship between physical literacy and the TARGET structures.

Researcher information: My name is Aiden Perrett and I am currently studing for a BSc Sport and physical education degree, at Cardiff metropolitan university. I am about to progress onto my third year of study, with the venture to specialise in pedagogy and becoming a PE teacher.

Background information: The proposed dissertation aims to investigate pupils perceptions of the TARGET structures (task, authority, recognition, grouping, evaluation and time) in relation to them predicting perceived physical literacy within PE. A further aim of the study is to investigate if a TARGET structure is more prominent within a PE setting to predict the development of physical literacy. This study will further research by providing strategies which can help develop physical literacy within the curriculum which can be studied further in intervention studies.

Procedure: The research will involve pupils filling in questionnaires looking at their perceptions of the TARGET structures and perceptions on physical literacy attributes within PE lessons. A sample of over 150 male and female participants, aged between 12-16 (Key stage 3-4), who undertake core PE will be used within the study.

Participants will be required to attend a single session, lasting approximately 15-20 minutes, to complete two questionnaires, individually in a familiar setting such as a quiet sports hall or classroom, immediately before or after a P.E lesson in the researcher's presence.

Pupils will be informed verbally and in writing that their participation within the study is optional and they have the right to withdraw at any time. Participants will remain confidential throughout the study and aren't required to submit any personal information throughout. The storage of data will be in accordance with the Data Protection Act 1984. All data including questionnaire forms will be stored securely for 5 years and then destroyed.

Further information: If you have any issue or concerns about the study feel free to contact me and I will be happy to help

Aiden Perrett
ST10001115@outlook.cardiffmet.ac.uk

APPENDIX B

CERTIFICATE OF CONSENT

UREC Reference Number:

Title of Project: Investigating the relationship between the TARGET structures and physical literacy

Name of Researcher: Aiden Perrett

Head Teacher/Head of Physical Education to complete this section: Please initial each box.

1. I confirm that I understand the research outlined. I have had the opportunity to consider the information, ask questions and have had any problems addressed. ☐
2. I understand that the participation of pupils is voluntary and that it is possible to stop taking part at any time, without giving a reason. ☐
3. I also understand that if this happens, our relationships with Cardiff metropolitan university and or our legal rights will not be affected. ☐
4. I understand that information from the study may be used for reporting purposes, but that the pupils will not be identified. ☐
5. I agree for Key Stage 3 and 4 pupils to take part in this research. ☐

_____ _____

Name of person taking consent Date

_____

Signature of person taking consent

APPENDIX C

TARGET Measure

Please think about the environment in which you participate in physical education lessons. The following statements refer to the teaching/learning environment and the way it is organised. For each statement, please indicate on the right-hand scale the degree to which the statement reflects your experience. Circle the appropriate number.

	Think of the following words in front of each statement: *During your PE lessons …*	*Strongly Disagree*	*Disagree*	*Neutral*	*Agree*	*Strongly Agree*
1	the teacher evaluates me **privately** on my individual progress so that others in the group cannot hear	1	2	3	4	5
2	the teacher regularly changes our groups within and between sessions	1	2	3	4	5
3	the teacher recognises only the more able members of the group	1	2	3	4	5
4	we are encouraged to focus on our own personal improvement	1	2	3	4	5
5	we participate in a variety of small groups, large groups and individually	1	2	3	4	5
6	we are assigned leadership roles	1	2	3	4	5
7	The goals that the teacher encourages us to set focus on competing against oneself and individual progress	1	2	3	4	5
8	there are equal opportunities for all participants to receive praise from the teacher for effort, improvement and accomplishment	1	2	3	4	5
9	We are encouraged to progress onto different aspects of the task when we are ready	1	2	3	4	5
10	we are organised into groups of similar ability	1	2	3	4	5
11	the teacher recognises us individually and **privately** for our effort and improvement	1	2	3	4	5
12	we are encouraged to accept positions of authority	1	2	3	4	5
13	The tasks are designed for variety and personal challenge	1	2	3	4	5
14	we are encouraged to participate in groups that have a range of abilities within them	1	2	3	4	5
15	participants are given responsibility for their own learning	1	2	3	4	5
16	we are evaluated against others within the groups or normative standards	1	2	3	4	5
17	we are encouraged to set goals to improve on our personal best performances	1	2	3	4	5
18	the teacher gives us opportunities to make decisions	1	2	3	4	5
19	the teacher gives us the opportunity to progress at our own preferred pace	1	2	3	4	5
20	we are recognised by the teacher for our individual effort and improvement	1	2	3	4	5

APPENDIX D

Physical Literacy Questionnaire

There are some opinions below about the physical education lessons you've had this year. For each of these, please show how true it is for you by circling one of the numbers:

1 2 3 4 5 6 7
not at all true — somewhat true — very true

	not at all true			**somewhat true**			**very true**
1. I enjoyed these lessons	1	2	3	4	5	6	7
2. I felt worried	1	2	3	4	5	6	7
3. I think I am pretty good at athletics	1	2	3	4	5	6	7
4. I felt nervous	1	2	3	4	5	6	7
5. I am happy with what I did	1	2	3	4	5	6	7
6. These were boring lessons	1	2	3	4	5	6	7
7. I put a lot of effort in	1	2	3	4	5	6	7
8. I was relaxed	1	2	3	4	5	6	7
9. It was important for me to do well	1	2	3	4	5	6	7
10. I tried very hard	1	2	3	4	5	6	7
11. This lessons were fun	1	2	3	4	5	6	7
12. I improved my skills	1	2	3	4	5	6	7
13. I was afraid of not doing well	1	2	3	4	5	6	7
14. I improved my confidence	1	2	3	4	5	6	7
15. I learnt a lot	1	2	3	4	5	6	7
16. I felt good about myself	1	2	3	4	5	6	7
17. I think I did pretty well	1	2	3	4	5	6	7
18. The lessons were interesting	1	2	3	4	5	6	7

Thank you for answering these questions

APPENDIX E

PARTICIPANT INFORMATION SHEET

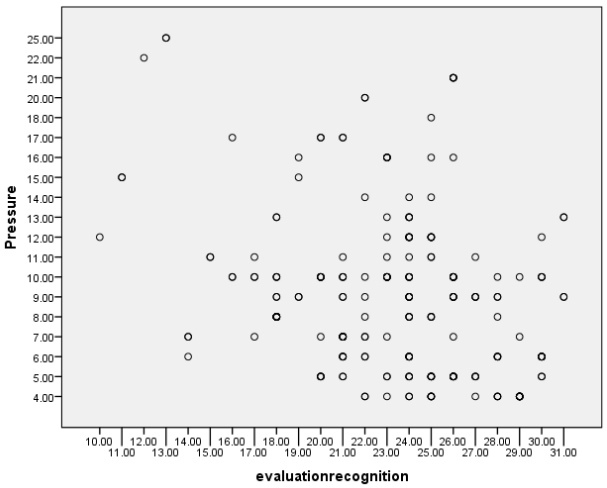
You have been selected to take part in this research due to your involvement in core Physical education (PE). The study requires you to fill in some questions about your participation within PE. The questions don't have a right or wrong answer and will be kept confidential (your teacher doesn't have access to it). On the questionnaires you don't need to sign your name, class or age.

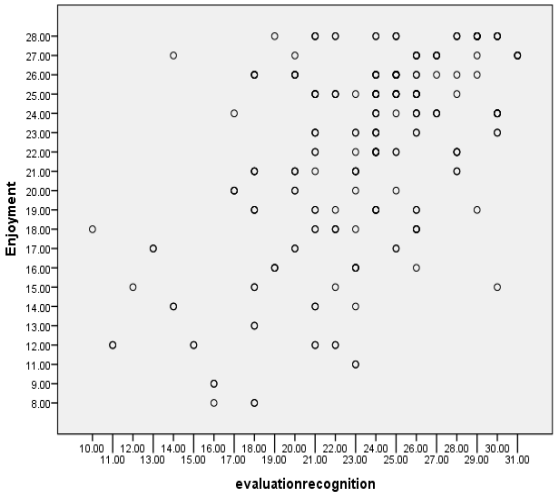
Please remember that participation within this study is entirely voluntary, allowing you to withdraw at any time. If you have any further questions please feel free to ask myself or your teacher.

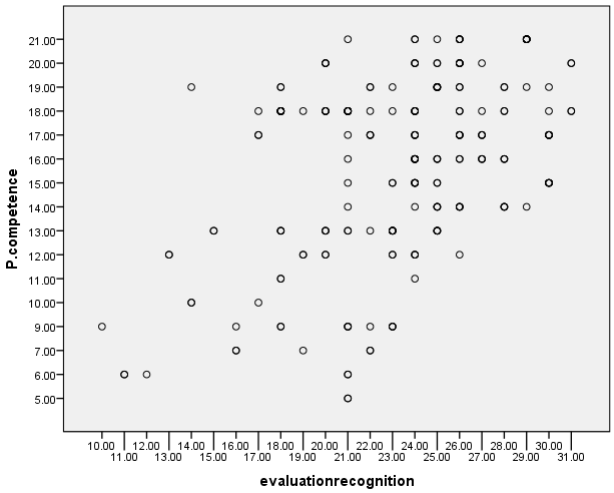
THANK YOU

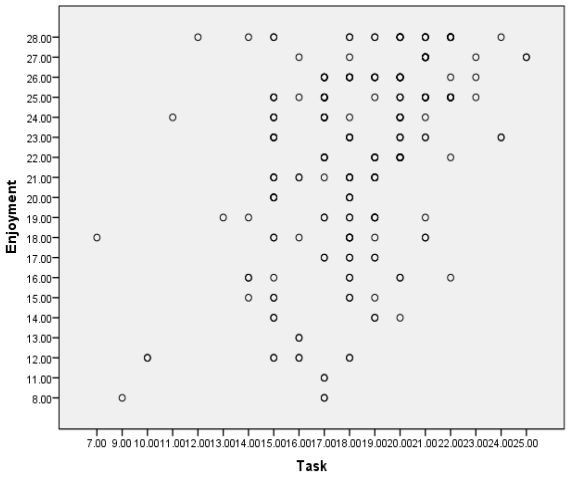
APPENDIX F

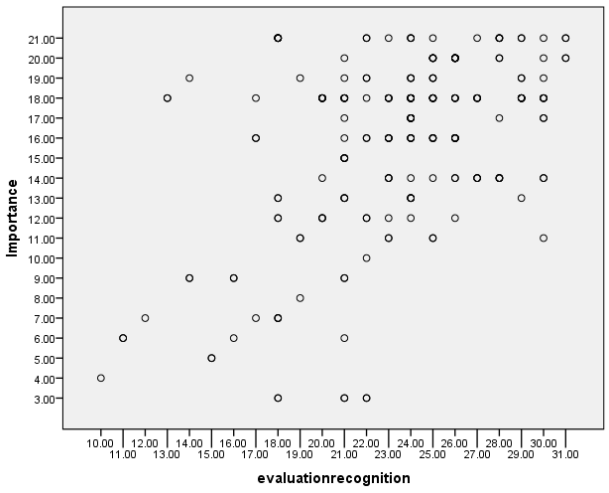
1. Normality and homoscedasticity

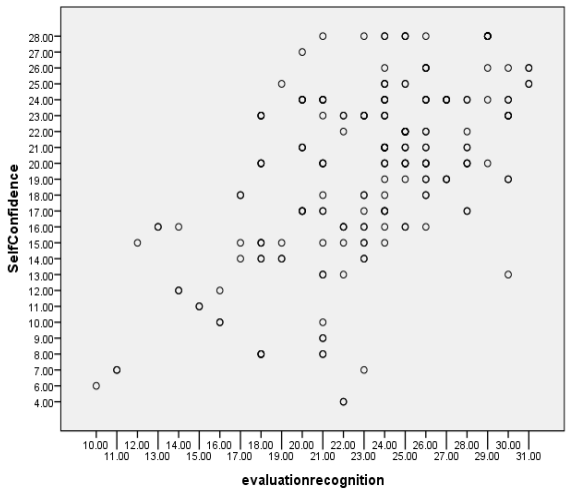


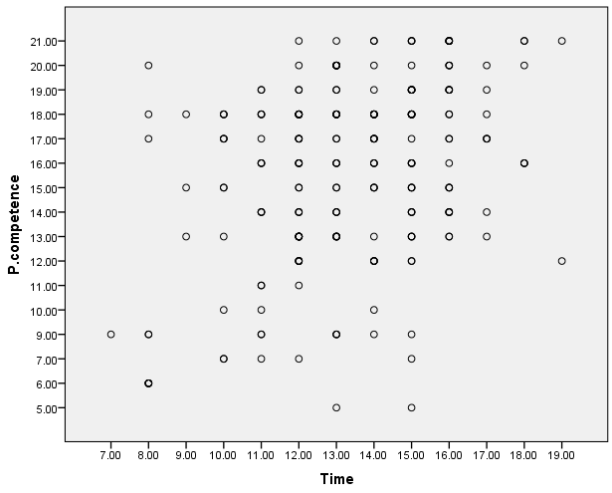


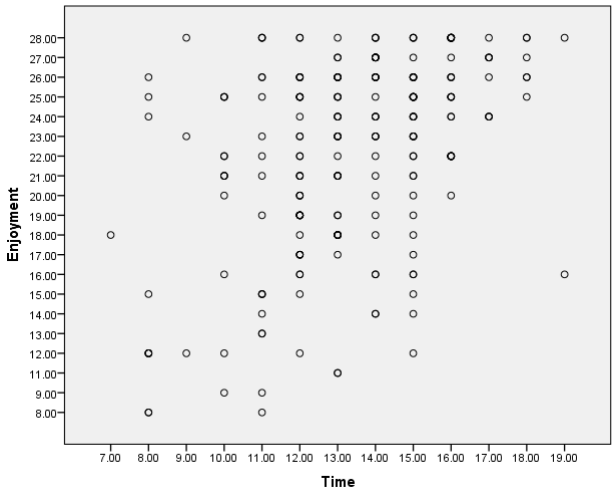


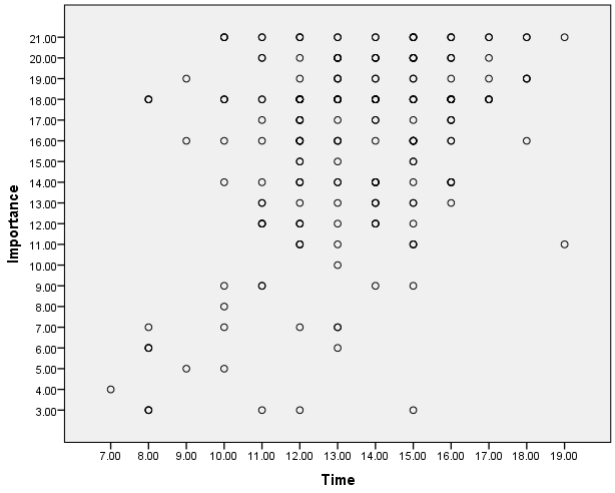


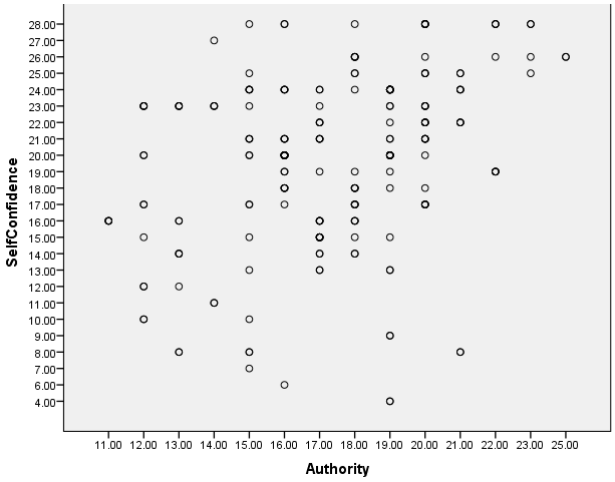


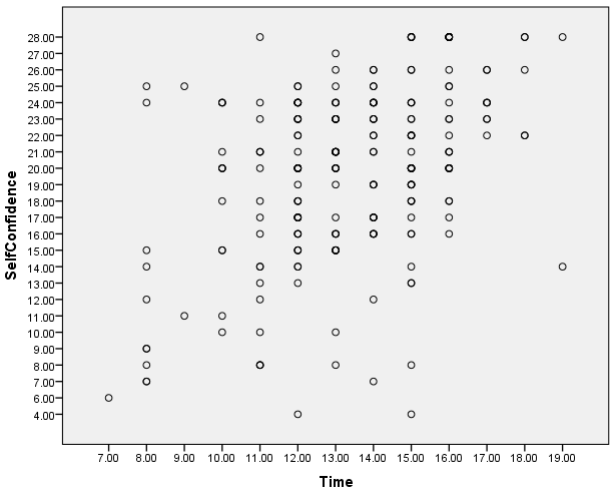


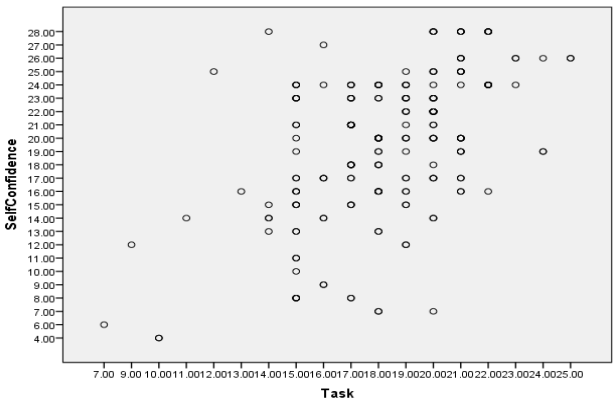

P.competence
Time

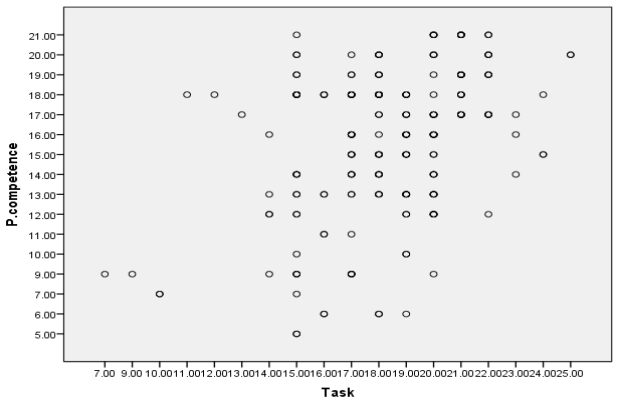

Enjoyment
Time

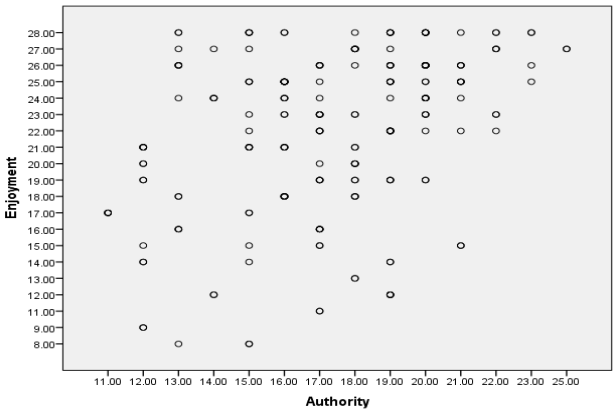

Importance
Time

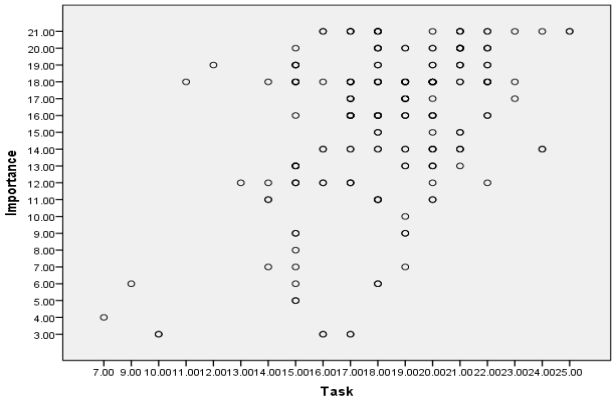

SelfConfidence
Authority

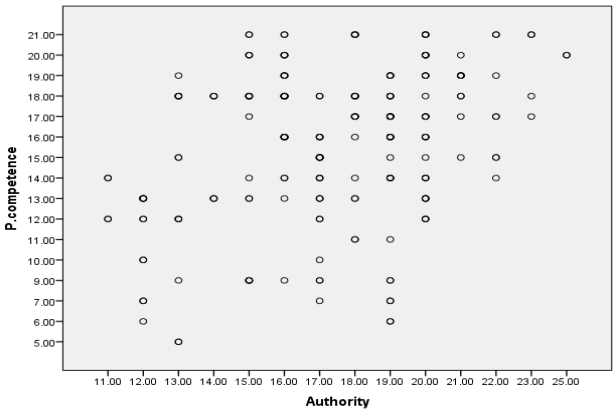

SelfConfidence
Time

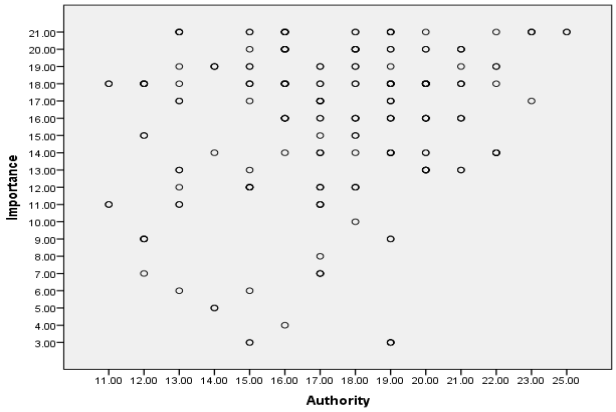

SelfConfidence
Task


P.competence
Task


Enjoyment
Authority


Importance
Task


P.competence
Authority


Importance
Authority

APPENDIX G

Assumption's for multiple regression analysis

Independence of observations

Durbin Watson value 0- positive autocorrelation 4- negative autocorrelation

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.546[a]	.298	.284	4.01532	1.390

a. Predictors: (Constant), Time, Authority, Task, evaluationrecognition

b. Dependent Variable: Enjoyment

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.388[a]	.151	.134	3.96839	2.218

a. Predictors: (Constant), Time, Authority, Task, evaluationrecognition

b. Dependent Variable: Pressure

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.452[a]	.204	.189	3.29773	1.576

a. Predictors: (Constant), Time, Authority, Task, evaluationrecognition

b. Dependent Variable: P.competence

Model Summary[b]

Model	**R**	**R Square**	**Adjusted R Square**	**Std. Error of the Estimate**	**Durbin-Watson**
1	**.518[a]**	**.268**	**.254**	**3.70262**	**1.357**

a. Predictors: (Constant), Time, Authority, Task, evaluationrecognition

b. Dependent Variable: Importance

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.594[a]	.352	.340	4.17762	1.194

a. Predictors: (Constant), Time, Authority, Task, evaluationrecognition

b. Dependent Variable: SelfConfidence