

Competitive Sport, Self-efficacy & Academic Achievement

A multiple regression analysis involving
secondary school students in Seventh-day
Adventist schools

Shannon Jay-Ingamells Batten

A thesis submitted to the Faculty of Education,
Avondale College, in partial fulfilment of the
requirements for the award of the degree Bachelor of
Education (Personal Development, Health and
Physical Education) (Honours).

November 2, 2003

Copyright © 2003, Avondale College

I hereby certify that the work embodied in this
thesis is the result of original research and has not
been submitted for a higher degree to any other
University or Institution.

Shannon Jay-Ingamells Batten

Supervisors Signature _____

Examiners Signature _____

Examiners Signature _____

Dedication

With much love and memories
To Mum.

Oh what I would give that you could be
here to share this with.



*You can do anything, if you want to try.
You can do anything, if you want to try.
You can try and try and try and try,
and try and try and try.
You can do anything, if you want to try.*

*You can go anywhere,
you can do anything.
You can go anywhere my boy.
You can do anything if you want to try.*

Thankyou Mum. I miss you. -xox-

Acknowledgements

This work could not have come anywhere near to being complete without the valuable support of the following individuals. To you I give my heartfelt thanks.

Firstly, I wish to thank Dr Peter Beamish, my academic supervisor, for his sound advice, ability to explain things in a way I can understand and for the many hours of reading and re-reading to get things flowing right. Thankyou Peter.

Many thanks also go to Malcolm Coulson, Co-ordinator of the Honours Program at Avondale College, for always offering a seat and an ear and for keeping things calm and collected in anxious times.

To the students, teachers and principals from the three schools that I collected my data. None of this could have been done without your willing participation. Thankyou.

I would also like to thank Juanita Harder for hours of in depth discussion, motivating me to work when I wasn't interested and for her understanding and support throughout this study.

For providing a stimulating and fun environment to work in, continual support, bouncing ideas around and for the necessity of procrastination, I would like to thank the other students in the honours program.

To my wonderful wife Jodi, for her unconditional support and love and for selflessly supporting me throughout this project. I love you.

Finally, and most importantly, I wish to offer thanks to God, who is the reason for my existence, who has blessed me with many gifts and talents and without whom, none of this would have been possible.

Table of Contents

	<i>Page</i>
Title Page	i
Declaration	ii
Dedication	iii
Acknowledgements	iv
Table of Contents	v
Lists of Tables	viii
Lists of Figures	ix
Abstract	x
Chapter 1 Introduction to the Study	1
Introduction	1
Background	1
Purpose and Objectives of the Study	2
Background to the study	2
Structure of the Thesis	4
Chapter 2 Review of the Literature	5
Introduction	5
Academic Achievement	5
Factors Influencing Academic Achievement	6
Background Factors	6
Sport	7
A Part of Society	8
A Part of Overall Well-being	8
Competitive Sport	11
Self-efficacy	12
Differentiation Between Self-efficacy and Similar	14
Constructs	
Challenges to the Theory	15
General and Specific Self-efficacy	17
Self-efficacy and Academic Achievement	20
Summary	21
Chapter 3 A Causal Model	22
Introduction	22
The Model	22
Variables	23
Defining the Constructs	24
Background Variables	24
Intermediate Variables	25

	Outcome Variables	27
	The Specific Model for Analysis	28
	Research Questions	28
	Major Questions	28
	Subsidiary Questions	29
Chapter 4	Methodology	30
	Introduction	30
	Participants	30
	The Population	30
	The Sample	30
	The Questionnaire	31
	Background Factors	32
	Intermediate Variables	32
	Outcome Variables	33
	Ethics Approval	34
	Pilot Testing	34
	Data Collection	35
	Data Analysis	35
	Summary	36
Chapter 5	Results	37
	Introduction	37
	Return Rates	37
	Background Factors	37
	Gender	37
	Age	38
	Year of Schooling	38
	School Representation	39
	Religion	39
	Type of Sport	40
	Construct Development	40
	Competitive Sports Involvement	40
	Competitive Sports Enjoyment	42
	Competitive Sports Success	42
	Self-efficacy	43
	General Self-efficacy	43
	Academic Self-efficacy	44
	PD/H Self-efficacy	45
	Academic Achievement	46
	PD/H Achievement	47
	Summary	48
Chapter 6	Analysis	49

	Introduction	49
	Differences Between Schools	49
	Outcome Variables: PD/H & Academic Achievement	52
	Intermediate Variables: Self-efficacy	53
	Intermediate Variables: Competitive Sport	53
	Indirect Pathways	54
	Overview of Causal Relationships	58
	Summary	59
Chapter 7	Discussion & Conclusion	61
	Introduction	61
	Response to the Research Questions	61
	Overview of Findings	63
	Limitations of the Study	65
	Recommendations for Further Research	66
	Implications for Christian Physical Educators	67
	Conclusion	68
References		69
Appendix A	Data Collection	76
Appendix B	Pilot Data	89

Lists of Tables

	<i>Page</i>
Table 2.1	Self-efficacy reporting scale
	16
Table 3.1	Proposed variables in causal model
	23
Table 5.1	Descriptive statistics for all constructs
	40
Table 5.2	Factor loadings for Competitive Sports Involvement
	41
Table 5.3	Factor loadings for Competitive Sports Enjoyment
	42
Table 5.4	Factor loadings for Competitive Sports Success
	43
Table 5.5	Factor loadings for General Self-efficacy
	44
Table 5.6	Factor loadings for Academic Self-efficacy
	45
Table 5.7	Factor loadings for PD/H Self-efficacy
	46
Table 5.8	Factor loadings for PD/H Achievement
	46
Table 5.9	Factor loadings for Academic Achievement
	47
Table 6.1	Multiple Linear Regression Stages
	51

Lists of Figures

	<i>Page</i>
Figure 2.1	Relationship between general and specific self-efficacy
Figure 3.1	The General Model
Figure 3.2	Proposed Causal Model
Figure 3.3	The Model of Analysis
Figure 5.1	Distribution by Age
Figure 5.3	Distribution by Year in School
Figure 5.4	Distribution by School
Figure 5.5	Distribution by Religion
Figure 5.6	Box Plots showing the distribution of responses for the scales CSI, CSE, CSS, GSE, ASE and PSE set against the likert-scale metric
Figure 5.2	Box Plots showing the distribution of responses for the scales Ac.Ach and PD/H set against the likert-scale metric
Figure 6.1	Full Model Displaying all Significant Causal Paths
Figure 6.2	Indirect Path: GSE-ASE-Ac.Ach
Figure 6.3	Indirect Path: GSE-PSE-PD/H
Figure 6.4	Indirect Path: CSE-PSE-PD/H
Figure 6.5	Indirect Path: CSS-GSE-ASE
Figure 6.6	Indirect Path: CSS-PSE-PD/H
Figure 6.7	Indirect Path: CSI-CSS-PSE
Figure 6.8	Indirect Path: CSI-CSS-PD/H
Figure 6.9	Indirect Path: CSI-CSE-GSE
Figure 6.10	Indirect Path: CSI-CSS-GSE
Figure 6.11	Indirect Path: CSS-GSE-ASE-Ac.Ach

Abstract

Physical activity and academic achievement are important and valued aspects of society. The present study investigated the relationship between involvement in competitive sport, self-efficacy beliefs and academic achievement in Seventh-day Adventist secondary school students. Within the study, competitive sport was divided into three aspects, involvement, enjoyment and success. Self-efficacy was investigated at two levels, general, and a more task specific level including academic and Personal Development & Health self-efficacy. Student self-reporting was used in measuring achievement in the subject areas of English, Mathematics and Personal Development and Health.

Data were collected from 619 students in 3 Seventh-day Adventist secondary schools using a 96-item questionnaire. Multiple linear regression analysis was employed to test proposed relationships in a theoretically constructed causal model, linking background, intermediate and outcome variables.

Aspects of competitive sport were found to have direct and indirect influences on levels of self-efficacy as well as academic and PD/H achievement. High general self-efficacy was found to significantly influence more specific levels of self-efficacy and there were strong positive paths existing from academic self-efficacy to academic achievement and PD/H self-efficacy to PD/H achievement.

Pathways within the causal model identified that students who are successful in competitive sport are more likely to achieve highly in Mathematics, English and PD/H. Students who enjoy their involvement in competitive sport exhibit high beliefs of PD/H self-efficacy and achieve highly in PD/H.

Chapter 1

Introduction to the Study

Introduction

Education is a complex social institution having several objectives and serving a number of purposes. Amongst these is the teaching of academic knowledge. There are many factors that influence an individual's academic achievement. Involvement in sport and physical activity, and self-efficacy are two such factors. This study examined the role that competitive sport and self-efficacy play in student academic achievement.

This chapter will describe the background of the study, establish its purpose and objectives, and identify the significance of the study. It will then move on to outline the structure of the thesis.

Background

Physical activity offers many physical, mental and social benefits. Sport by its nature is a form of physical activity. Much research has been conducted examining the effects of sport on academic achievement, however there is a lack of literature relating specifically to the competitive aspect of sport. Competition adds a new dimension to sport involvement. What is the effect of competitive involvement in sport to student academic achievement?

The theory of self-efficacy has been applied to many lifestyle aspects and it has been shown to have influences on these aspects. Self-efficacy beliefs strongly influence performance in specific tasks and the affect may generalise to other areas. Self-efficacy beliefs arise from experiences and perceptions. Successful experiences raise beliefs where failures lower them. How does competitive sport influence beliefs of self-efficacy? What is the relationship between self-efficacy and academic achievement?

In response to these questions this study examines the influence that competitive sport has on self-efficacy and how self-efficacy beliefs impact on student academic achievement.

Purpose and Objectives of the Study

It was the purpose of this study to examine the relationship between involvement in, enjoyment of, and level of success in competitive sport and different levels of self-efficacy and how each of these influences student academic achievement. The objective of the study was:

- To investigate the relationship between aspects of competitive sport, self-efficacy and academic achievement,

A number of research questions were posed based on the above objective (these are outlined in chapter 3). The study set out to achieve the objectives through collecting information from secondary school students in the form of an anonymous questionnaire, developing a theoretically based causal model, and using statistical analysis to test the model. Relationships were established between the variables and conclusions drawn from them.

Background to the Study

It is of interest to this current research to consider elements of the study in light of a Christian outlook. This section will briefly consider the philosophies of the Seventh-day Adventist church in regard to education and competitive sport.

Adventist education strives to provide holistic education catering for “the harmonious development of the physical, the mental, and the spiritual powers.” (White, 1903, p 13). Many of the principles that form the foundations of Adventist education are derived from the writings of Ellen G White. Included among her counsels is advice regarding participation in physical activity. Exercise was considered to be of utmost importance to a person’s well being (Graybill, 1974). Lack of physical activity leads to a variety of problems and Ellen White documented this almost a century ago. She believed that the best situation one could be in is

where they participate in physical activity for personal enjoyment. Such was White's belief in the benefits of physical activity that she devoted an entire section of her book "Education" (1952) to physical culture, which looked at physiology, dietetics, recreation and manual training.

With regards to competitive sport, Ellen White never used the term 'competition' in direct reference to sports (Graybill, 1974). However, she did make references to competition in general and the Education Handbook published by the South Pacific Division of Seventh-day Adventists (1999) outlines guidelines for activities with elements of competition. The guidelines make it very clear that competition is not something to be encouraged. Competition is viewed to provoke un-Christlike traits such as selfishness, rivalry, hostility, strife, love of dominance, love of pleasure or unwholesome excitement. Reference is made to White (1952) stating, "In God's plan there is no place for selfish rivalry. Those who 'measure themselves by themselves and compare themselves among themselves are not wise' 2Cor 10:12" (p.226). Recommendations are made that exposure to competition should be minimised and discouraged, that a better way is to promote co-operation. These are applied to all aspects of activities including recreational and athletic programs.

Although it is possible for competition to result in such negatives, the apostle Paul makes many references likening life to a race "Do you not know that in a race all runners run, but only one gets the prize? Run in such a way as to get the prize." 1Cor 9:24 (NIV, 1989). Races by their very nature are competitive and Christians are instructed to do their best and not give up, "Whatever your hand finds to do, do it with all your might" Eccl 9:10 (NIV, 1989). In order to strive to do one's best, one needs motivation. Competition is an excellent source of motivation and in such a context, allows for the growth of Christian character. The negative traits that may be experienced as a result of competition become evident when the bigger picture is lost and the focus of a person shifts to winning at all costs. It is when this happens that competition is negative. However, when competition serves as a motivating factor in doing one's best, the end result may be positive.

Structure of Thesis

This thesis has been divided into 7 chapters. The current chapter has introduced the study in terms of the background factors and has identified the main aspects of the study. It has also provided a background to the study.

Chapter 2 examines literature relating to academic achievement, sport and self-efficacy. The review aims to be representative of the scope of the research and to form the theoretical basis of the study and the foundation for the development of a causal model.

In Chapter 3, the model for analysis is established from theory drawn from the literature. The variables to be included in the model are identified and the constructs are defined in terms of background, intermediate and outcome variables. The chapter concludes by identifying the specific research questions to be addressed by the study.

A description of the research methodologies employed in the study is provided in Chapter 4. This includes the processes undertaken in identifying the population and sample, development of the questionnaire and collection and analysis of the data.

The results of the study are divided into two sections. Chapter 5 provides a descriptive discussion of results. It builds a profile of students, and provides results of factor analyses for each of the constructs. The causal model is tested in Chapter 6. The results of multiple linear regression analysis are discussed identifying significant causal paths within the model.

The final chapter presents a further discussion on the findings of the study. Answers to the research questions identified in Chapter 3 are provided. Limitations of the study are identified and recommendations for further study are made. The chapter concludes by considering some implications for Christian educators.

Chapter 2

Review of the Literature

Introduction

Sport is a large part of Australian society (Buckingham, Sullivan & Hughes, 2001) and impacts on individuals in many ways (Coakley, 1998). In school, sport and sporting programs are an integral part of school life through physical education classes and intra-school and inter-school sport competitions (ibid). Research into sport and physical activity is continually strengthening the understanding of the role they play in increasing general wellbeing. However increasing rates of obesity and other health-related conditions (ABS, 2002) would suggest that people still have poor understanding of, or place little value on, involvement in sport and physical activity.

Education and schooling is valued in society and it is part of life for all young Australians. There are many factors that influence people's education. This chapter will provide an examination of the literature surrounding academic achievement; it will also investigate the role of sport and competitive sport in school, and differing aspects of self-efficacy theory on success at school.

Academic Achievement

In the 'developed world', formal education is a major part of people's lives. From an individual perspective, people spend a large proportion of their childhood and adolescence attending school. Whether it is pre-school, primary or secondary school, ten to thirteen years of a person's first eighteen years are spent in some kind of educational institution. Some people also go on to further their formal education by attending a tertiary institution such as university or Technical And Further Education (TAFE) College. From a broader perspective, education forms part of the socialisation process of the individual (Earl & Fopp, 1999). Former US President, Bill Clinton, in a speech at the Education International World Congress, made a point that in order to strengthen worldwide democracy and meet the challenges of

the 21st century it is required “to guarantee universal, excellent education for every child on our planet,” (Clinton, 1998). Much study has been conducted in the area of educational research aimed at maximising people’s learning potential. This study was particularly interested in studying aspects that may affect education in secondary school students.

Education has many purposes and goals. Earle and Fopp (1999) identify the teaching of knowledge as a purpose of education. In April 1999, ministers for education for state, territory and national governments met in Adelaide, Australia, to endorse revised *National Goals for Schooling in the Twenty-first Century*, now more commonly referred to as the *Adelaide Declaration* (1999). These goals, which replaced those already established by the decade-old Hobart Declaration (1989), addressed issues such as skills, talents and capacities required by students for when they leave school, curriculum considerations, and social issues. The Adelaide Declaration also addressed the academic focus and standards of education. Society places value on high levels of academic achievement and many studies have used academic achievement as an outcome variable (Schumaker, Small & Wood, 1986; Jordan, 1999; Field, Diego & Sanders, 2001; Lent, Brown & Larkin, 1986; Pajares, 1996). Thus, although there are many aspects of education, there is a high level of importance placed on achievement in academic areas. There are many influences on academic achievement and this chapter will now discuss some of them.

Factors Influencing Academic Achievement

Background Factors

A review of the extensive body of literature indicates that background factors that may influence a person’s educational potential include socio-economic status, family structure, type of school, gender, ethnicity, and geographical location (Considine & Zappala, 2002). The socio-economic status (SES) of parents is important as it has an influence on the choice of school their child attends (Brutsaert & Van Houtte, 2002) and also has an influential relationship on other factors (Considine & Zappala, 2002). Family structure includes issues such as the make up of families, and the income and educational level of parents. Children from sole parent and low-income families are less likely to perform well in education (ibid). Students who attend private schools in

Australia are more likely to achieve at a higher level academically. There is evidence to suggest that the SES link is a strong factor as private schools are more likely to have students from a higher SES background (ibid).

Academic achievement has been seen to vary between the genders with females recently out performing males especially in the area of literacy (Buckingham, 1999 cited in Considine & Zappala, 2002). There are a number of possible reasons for the difference between the genders and this has been the subject of considerable debate surrounding single-sex verses co-educational schooling (Brutsaert & Van Houtte, 2002). The location of the school has also been shown to influence student academic performance. “Students from non-metropolitan areas are more likely to have lower educational outcomes in terms of academic performance and retention rates than students from metropolitan areas.” (Cheers, 1990. Cited in Considine & Zappala, 2002).

Education is a complex social institution. There are many aspects to it and much literature exists in the realm of educational research. It has been established that there are many aspects and influences to one’s academic achievement and that high achievement is valued within society. Aside from background factors such as those just discussed, there are other factors that may influence a person’s achievement in academic study. These factors include sport and self-efficacy. The following section to this chapter will provide a discussion on literature surrounding sport, physical activity and competitive sport.

Sport

Sport has been defined as,

“...activities that involve vigorous physical exertion or the use of relatively complex physical skills by individuals whose participation is motivated by a combination of personal enjoyment and external rewards.” (Coakley, 1998, p19)

Sport is a large part of society in many populations around the world and has many beneficial impacts on health and wellbeing.

A Part of Society

Sport has become an important part of the social profile of society (Coakley, 1998). Around the world events such as the Olympics, soccer, rugby and cricket world cups, the Tour de France, and tennis grand slam tournaments capture the attention of billions of people worldwide and many athletes become national and international celebrities and role models (ibid). Whether through televised coverage, news segments, newspaper articles, clothing and merchandise endorsements or personal involvement, people are exposed to sports in many ways (ibid). In Australia, this is reflected in the stereotypical image of the 'dinki-die Aussie' as a bronzed male Bondi surf life-saver (Bessant & Watts, 2002). Like much of the developed world, Australian society is one where sport forms a large part of it's social environment (Buckingham, Sullivan & Hughes, 2001). Many major public events drawing crowds numbering tens of thousands are sporting events such as football representative games and grand finals, tennis opens and the Olympics (Bessant & Watts, 2002).

A Part of Overall Well-being

Sport and exercise both fall under the realm of physical activity. A substantial amount of literature exists that addresses physical activity and supports the idea that participation in regular physical activity has widespread health benefits in most aspects of our lives (Koivula, 1999). The World Health Organization refers to 'health' as well-being in terms of physical, mental and social aspects. It is not merely the absence of illness or injury (WHO, 1986). The benefits offered by physical activity for each of these areas are discussed below.

Regular physical activity has been shown to positively effect physical well-being. Perhaps the most substantial benefit gained from physical activity is in the realm of weight management. The human body is constantly striving to maintain a state of homeostasis (Sherwood, 1997). Weight management is an issue of energy balance whereby the body gains energy from the foods consumed and expends energy through maintenance of physiological functions and physical activity (ibid). If the amount of energy consumed is the same as the amount of energy expended, then bodyweight remains stable. If consumption exceeds expenditure then the body converts the surplus energy into subcutaneous fat for storage. The reverse is also true. If expenditure exceeds consumption then the body draws on its stored

energy to meet the demands (Wardlaw, 1999). Thus, there are two main ways to maintain body weight. These are by modifying energy consumption, in other words by 'dieting', or by modifying energy expenditure through physical activity. The most effective method is a combination of both (Pescatello, 2001; Thorogood, 2003).

In addition to the benefits of weight management, studies have also found strong evidence supporting the beneficial effects of regular physical activity on the treatment and management of lifestyle diseases such as cancer (Friedenreich & Orenstein, 2002), diabetes (Funnell, 2003; Anonymous, 2003), coronary heart disease (Thompson, 2000), and stress-related conditions (Slama, Susic, & Frohlich, 2002). Considering the increasing rate of obesity in Australia (ABS, 2002), and its strong link with lifestyle related problems such as pulmonary function (Li et al, 2003) cardiovascular diseases, hypertension and diabetes (Warash, 2003), it is of vital importance that young people are encouraged to, and given adequate opportunities to, regularly participate in physical activity.

The benefits of physical activity do not stop at the physical level. Sport and physical activity have also been shown to be related to positive mental health (Newcombe & Boyle, 1995), and emotional wellbeing (Steptoe & Butler, 1996). With the technological and communication advances of recent decades, people are often committed to very busy schedules. This leads to considerably high stress levels leading to increased incidence of mental health disorders such as depression and anxiety (Cai, 2000). These disorders affect millions of people throughout the world and are associated with increased morbidity rates and place heavy strains on healthcare systems (Fontaine, 2000). Although the exact mechanisms involved in the relationship between physical activity and mental health disorders are unclear (Fontaine, 2000), there is substantial evidence to show that physically active individuals have a greater sense of well-being and higher self-image (Chodzko-Zajko & Ismael, 1986 cited in Osness & Mulligan, 1998). People who are physically active also have a lower risk of depression and anxiety than their sedentary counterparts (Osness & Mulligan, 1998).

Students at school also find themselves under pressure. There are increased strains placed on them with classes, essays and tests. This can lead to anxiety and

depression that are strong contributing factors in dropout rates, alcohol and drug abuse and violence (Cai, 2000). It is important for teachers and physical educators to understand the role of physical activity in the management of such mental health conditions.

As outlined above, physical activity plays a pivotal role in both physical and mental realms. In line with the World Health Organisation view of health, it is important to also consider the social benefits of physical activity. "Sport and physical activity programs provide an effective vehicle through which personal and social development in young people can be positively affected." (Australian Sports Commission, 2003). However, research surrounding the social affects of sport is somewhat inconclusive. There is evidence in support of sport as a facilitator to the development of positive or desired social virtues (Washington et al, 2001). However literature also exists supporting the notion that involvement in sport has a negative impact on social interactions (Coakley, 1998). In particular, such evidence surrounds issues in children's participation in organised sports (ibid).

When studying the issue in relation to children and adolescents, the problems associated with organised sports involvement often stem, not from the participants, but the adults who organise the events, and more often, the parents of the participants (Washington et al, 2001). Organised sport provides opportunities for increased physical activity and development of important social skills, it is the nature of the organisation, not the sport or activity itself, that can determine whether the outcomes are positive or negative (ibid). Although written almost thirty years ago, Novak (1976) encapsulates an important aspect of sport that is still evident in the present world of sport:

"Sport teaches us lessons in human limits. Because sport offers no hiding places, it also teaches honesty and authenticity. In short, it teaches us something about personal wholeness and integrity. If we give it the respect and attention it deserves, it teaches us something about joy." (Novak, 1976, p43)

A study conducted by the Australian Institute of Criminology presented findings that a positive relationship between involvement in sports and a reduction of antisocial behaviour (Morris et al, 2003). Sport often provides avenues of social interaction

through organised weekend games such as football, cricket and other local competitions. These interactions can teach people valuable social skills such as teamwork, leadership and good sportsmanship (Washington et al, 2001).

Competitive Sport

Competitiveness adds a different dimension to sports participation. Although there is an extensive body of literature surrounding sport, not all of these studies specifically cover the competitive aspect of sport.

The term ‘competitive sport’ is somewhat ambiguous and the understanding of the term can differ greatly between individuals. Henkel (1997) provides a definition when he states,

“Traditionally, competitive games are characterized by mutually exclusive goals, so that the success of one player or team reduces the success of other players or teams. Competition may occur between two individuals, within a single group or between two or more groups... there is one winner and one loser, or one winner and more than one loser... players strive to gain rewards that are in limited supply. Rewards consist of points, prizes or other recognition.”

Henkel contrasts competition with co-operation. Competition involves one winner and one or more losers, while co-operation is,

“...characterised by mutually compatible goals. The success of one player or team contributes to the success of other players or teams. Rewards are not limited because all participants share the rewards available.” (Henkel, 1997).

Thus, for the purpose of this research, competitive sport will refer to sports, either of a team or individual nature, where players compete for limited rewards, whether they be material (trophies, money etc) or immaterial (e.g. prestige or status), The competition results in a situation where there is only one winner and one or more losers.

The results of research into the effects of sporting involvement and academic achievement is inconclusive. There is evidence to support that involvement in sport has both beneficial and negative affects on education and academic achievement

(Coakley, 1998). Support for the notion that involvement in sport has negative impacts upon educational achievement largely centres around American collegiate sports such as American Football, Baseball and Basketball programs (Peltier, Laden & Matranga, 1999; Pascarella, 1995; Benson, 2000). A great deal of this literature relates to black American athletes. Maloney and McCormick (1993) found that athletes performed below their non-athlete counterparts in academic areas. It is suggested, however, that such information is not necessarily a reflection of the characteristics and ‘problems’ of athlete-students, rather it reflects the nature and possible problems evident in the structure and policies of educational practices (Benson, 2000).

There is also evidence to support a positive impact of involvement in sport on academic achievement (Pascarella et al, 1995). It has been found that student involvement in school-organised sport had a small but consistent positive relationship with their academic achievement (Jordan, 1999). Involvement in sport also appeared to have beneficial effects in regard to student personal interest in education by providing them with opportunities to interact with teachers, administrators, parent volunteers and other staff (ibid). One possible explanation for the positive relationship is that physical activity has been shown to increase neurotransmitters such as serotonin and it is suggested that this may enhance academic performance (Field, Diego & Sanders, 2001).

In summary, whether it be physical, mental or social, there is evidence from the existing literature to support the notion that physical activity and sport have widespread positive effects on our lives. They also may have influences on student academic achievement. Another influencing factor on academic achievement is self-efficacy. This section will now consider the literature surrounding self-efficacy.

Self-efficacy

The notion of self-efficacy was established by Albert Bandura in 1977 with the publication of “Self-efficacy: Toward a Unifying Theory of Behavioural Change”. It arose out of the social learning theory in a search for a new perspective on the cognitive processes involved in behavioural change. The self-efficacy theory was established as a framework for analysing changes in behaviour and for predicting

further behavioural change (Bandura, 1977). Since then, research on self-efficacy has ‘exploded’. There is evidence to support self-efficacy as a predictor of performance in motor tasks (Weinberg, Gould & Jackson, 1979), and as a predictor of performance in clinical problems such as phobias, addiction and depression, smoking behaviour, health and athletic performance (Pajares, 2002a)

Bandura has spearheaded self-efficacy theory and research. He defines self-efficacy as “Peoples *judgements of their capabilities* to organise and execute courses of action required to attain designated types of performances” (Bandura, 1986, p.301, emphasis added). In other words, self-efficacy is a person’s belief that they are able to perform a certain action/s necessary to produce a desired outcome. Self-efficacy influences the choices people make about the activities they participate in, the amount of effort put into participation in the activity and the degree of persistence shown with the activity when faced with failure (Bandura, 1977). It is largely due to the role of self-efficacy in these three areas: choices, effort and persistence, that self-efficacy is considered to be the most powerful determinant of human behaviour change (Sherer et al, 1982).

Self-efficacy beliefs are formed from information gathered from four sources: performance accomplishments, vicarious experiences, verbal persuasion and emotional arousal (Bandura, 1977). Performance accomplishments, based on personal mastery experiences, have been shown to be particularly important. Successful experiences raise self-efficacy and failures lower it. Self-efficacy can be influenced by a person’s vicarious experience, which is gained by observation of other people completing a task. Similar to personal experience, observing a successful result has a positive influence on self-efficacy, whereas watching a poor performance or failure of a task can have a negative effect. This source of information has a high influence on self-efficacy although not quite as substantial as performance accomplishments. The third source of influence is verbal persuasion. Again, the influence is not as great as performance accomplishments or vicarious experience, however there is an influential affect. Information from verbal persuasion can be from coaches, parents or ‘significant others’ and has the potential to lead people into a high belief in their capability. The final source of self-efficacy forming information is from emotional arousal. This has the least influence on self-

efficacy. It involves people relying on intrinsic feedback about their own levels of arousal and anxiety to judge and control their performance potential (Bandura, 1994).

Differentiation Between Self-efficacy and Similar Constructs

There is often much confusion in peoples understanding of self-efficacy. It is often mistakenly referred to, and used interchangeably with, confidence, self-esteem and self-concept. Self-efficacy is however, a well-defined construct. It relates specifically to peoples *judgements about their capabilities* to perform (Bandura, 1977). There continues to be, however, a misunderstanding of the construct and the following paragraphs will outline the differences between self-efficacy and confidence, self-esteem and self-concept.

In relation to confidence, Bandura provides a clear differentiation between the two:

“It should be noted that the construct of self-efficacy differs from the colloquial term “confidence.” Confidence is a nondescript term that refers to strength of belief but does not necessarily specify what the certainty is about. I can be supremely confident that I will fail at an endeavour. Perceived self-efficacy refers to belief in one’s agentic capabilities, that one can produce given levels of attainment. A self-efficacy assessment, therefore, includes both an affirmation of a capability level and the strength of that belief. Confidence is a catchword rather than a construct embedded in a theoretical system.” (Bandura, 2003)

The Collins English Dictionary defines self-esteem as a “respect for or favourable opinion of oneself” (Wilkes & Krebs, 1998). It is a term referred to early on by William James who described it as a feeling that is dependent on what we ‘back’ ourselves to be (Pajares & Shunk, unpublished). James provided a formula suggesting that self-esteem describes that how people feel about themselves is dependent on the “successes with which we accomplish those things we wish to accomplish.” (ibid). Self-esteem then, is a personal evaluation of one’s worth indicating whether or not a person accepts and respects themselves (Shunk, 1991).

Self-concept is a more encompassing construct and is defined as “the whole set of attitudes, opinions, and cognitions that a person has of himself” (Wilkes & Krebs, 1998). It is an individual cognitive appraisal of oneself across various dimensions (Bandura, 2002a). The difference between the two can be seen in a person who

exhibits poor self-efficacy in relation to ice-skating, however this has little impact on their self-concept because they place no personal importance on being able to do that activity (Pajares, 2002b). Assessment of self-efficacy and self-concept is distinctly different. Typical self-efficacy statements are “I am confident that I can write an essay without spelling errors.” And “I am confident that I can solve that math problem.” (Bandura, 2002b). Whereas typical statements of self-concept are “My friends come to me for help with their essays.” And “Mathematics makes me feel inadequate.”(ibid).

Self-efficacy is a distinct construct. It is similar but separate to the constructs of self-esteem and self-concept.

Challenges to Self-efficacy Theory

It is interesting to note that not all researchers of cognitive psychology agree with all aspects of Bandura’s theory of self-efficacy. *Advances in Behaviour Research and Therapy* (1978) published a special issue containing critiques of the theory by several researchers (Borkovec, 1978; Kazdin, 1978; Teasdale, 1978, in *Advances in Behaviour Research and Therapy*, 1978). Bandura replied to these criticisms seeking to answer specific points in order to clarify his position (Eastman & Marzillier, 1984). It was the response from Bandura that motivated the publication of a paper by Eastman and Marzillier in 1984 outlining key theoretical and methodological problems in the theory. They believed that the central concept of self-efficacy theory was ambiguous in its distinction between efficacy and outcome expectations. They argue that although Bandura appears to distinguish between the two, his attempt to do this leaves too much ambiguity between them where they are in fact closely related. Eastman and his colleague make the point that at a “theoretical level...self-efficacy theory is based upon premises of doubtful theoretical status.” (ibid). Considering the “bold claim” (ibid) that self-efficacy is a construct describing cognitive mechanisms that underlie all psychotherapies, they believe that this claim cannot be substantiated until a clearer definition between efficacy expectations and outcome expectations is made.

The paper also critiques the methodology used in Bandura’s initial experiments with snake-phobic, aerophobic and aquaphobic subjects. They argue that the scale (table

2.1) used in these studies to report efficacy expectations was poorly constructed on a number of levels. The main emphasis on this point is that Bandura states that the scale is a “100-point probability scale” however there is no zero-point, the scale begins at 10. They also argue that the labels used on the scale are “inappropriate in the context of probability assessment” and perhaps the scale is in fact measuring “something other than self-efficacy.” (Eastman & Marzillier, 1984).

Table 2.1 - Self-efficacy reporting scale

Rate your degree of confidence by recording a number from 10 to 100 using the scale given below:										
10	20	30	40	50	60	70	80	90	100	
quite				moderately						Certain
uncertain				uncertain						

This paper led to a reply from Bandura (1984) defending his theory using a comprehensive range of literature to support his position. In the reply, Bandura states that the criticisms put forward by Eastman and Marzillier are based upon misconceptions about the theory of self-efficacy. He addresses the issues raised by the critique and re-establishes the theoretical foundations upon which self-efficacy is built. In regards to the suggested ambiguity regarding efficacy and outcome expectations, Bandura re-defines the distinction between the two as understood in the self-efficacy theory:

“Dictionaries define an *act* as “a thing done” and an *outcome* as “something that follows as a result or consequent of an activity.” This conventional usage for both the terms *act* and *outcome* is followed in self-efficacy theory. A self-percept of efficacy is a judgment of one’s capability to accomplish a certain level of performance. Outcome expectations are the likely consequences of such behaviour will produce.” (Bandura, 1984).

In regards to the stance taken by Eastman and Marzillier on the theoretical problems of the theory, Bandura replies by stating that they “misconstrue the specifying criteria of an act as the consequences that flow from it.” (ibid). Put this way, in their critique, their definitions of an act, includes aspects that are actually part of what is more commonly understood as the outcome.

In response to the criticisms made by Eastman and Marzillier about the methodological problems surrounding the response scale, Bandura makes the point that in that particular study, the responses were given in two parts. The first is a judgement about whether or not subjects feel that they are able to complete a given task. The second is a judgement concerning the strength of their self-efficacy for the tasks that they indicate they *can* do. If, in the first part they indicate that they feel they are unable to complete the given task, it is then assumed that their response to the second part would be zero. Bandura states that:

“It would be nonsensical to include a zero value on the scale because, having already indicated that they can do something, they should not be asked whether they can do it with zero certainty. The first rating in the two-step judgement addresses the judgement of total inefficacy.” (Bandura, 1984).

However, Marzillier and Eastmann (1984 b) seemed dissatisfied with Bandura’s response and published a second paper claiming that he did not adequately answer their criticisms. They re-iterate on the original major points of concern and further clarify their positions in regard to the apparent lack of distinction between outcome and efficacy expectations, and the original concerns surrounding the response scale used in early testing.

In summary, although Bandura founded the theory of self-efficacy, there are aspects of it that have raised some concerns. The above outlines one circumstance where there was considerable debate over two main issues. Although the theory in the main part is a solid and commendable one, it is important to continually evaluate it and, if necessary, revise, add to and ultimately, strengthen it.

General & Specific Self-efficacy

The original theory of self-efficacy, as put forward by Bandura (1977), emphasizes that it is a domain specific construct. In order for self-efficacy to be used as a predictor of performance in a specific task, it must measure a person’s level of self-efficacy in regards to *that* specific task. According to the theory, measuring self-efficacy in a global sense is not a reliable predictor of performance in a specific task or domain (Shelton, 1990; Watt & Martin, 1994). Bandura did not dispute, however, that there is no such thing as general self-efficacy. He theorised that individual

beliefs in self-efficacy differ in several dimensions: generality, magnitude and strength (Bandura, 1977). The magnitude of self-efficacy refers to nature of the task, in terms of simplicity and complexity, for which individuals have efficacy expectations. Self-efficacy also varies in its strength. A weak self-efficacy is easily extinguished by negative experiences while people with strong self-efficacy will persist even when faced with failure. Finally, the generality of self-efficacy refers to whether self-efficacy affects a specific skill or task, or whether it instils a more generalised sense of belief extending far beyond the specific situation (ibid).

Although self-efficacy arose predominantly as a domain-specific construct, it has been shown that it can also be conceived as a general construct and it is suggested that this concept explains why some people have a more positive outlook on life than others (Shelton, 1990). Several researchers have studied the concept of general self-efficacy and have found it to be a valid construct that is not entirely separate from Bandura's original theory (Sherer et al., 1982; Woodruff & Cashman, 1993; Bosscher & Smit, 1998). 'Generality' is merely a continuum. Bandura's theory focuses on the 'specificity' end of the scale, while some researchers have focussed on the 'generalised' end (Sherer, 1990).

Perhaps the most significant research conducted on the concept of general self-efficacy was that carried out by Sherer and his associates in 1982 that made the point that a person's general sense of self-efficacy is a mental collaboration of all their past experiences, both failures and successes. While initial research on general self-efficacy has focussed on validating the construct, Watt and Martin (1994) focussed specifically on the relationship between general and specific self-efficacy. They found that an inter-correlation of $r = 0.52$ was significant ($p < .05$) between the two. They also found that there was a significant but weak partial correlation ($r = 0.23$, $p < .01$) between general self-efficacy and performance in a variety of tasks. However, the partial correlation between specific self-efficacy and performance was significantly stronger ($r = -0.39$, $p < .01$). They concluded that "general self-efficacy informs specific self-efficacy, which then influences performance at a specific task." (ibid).

Shelton (1990) hypothesised a diagram (figure 2.1) to illustrate the relationship between general self-efficacy and specific self-efficacy and how they both contribute to competence and performance in specific tasks. According to her hypothesis, a person's general sense of self-efficacy comes from their attribution of all successes and failures to the 'self'. This then informs their specific self-efficacy, which is also influenced by their attribution of specific task successes and failures, which as shown in the above diagram, influences performance.

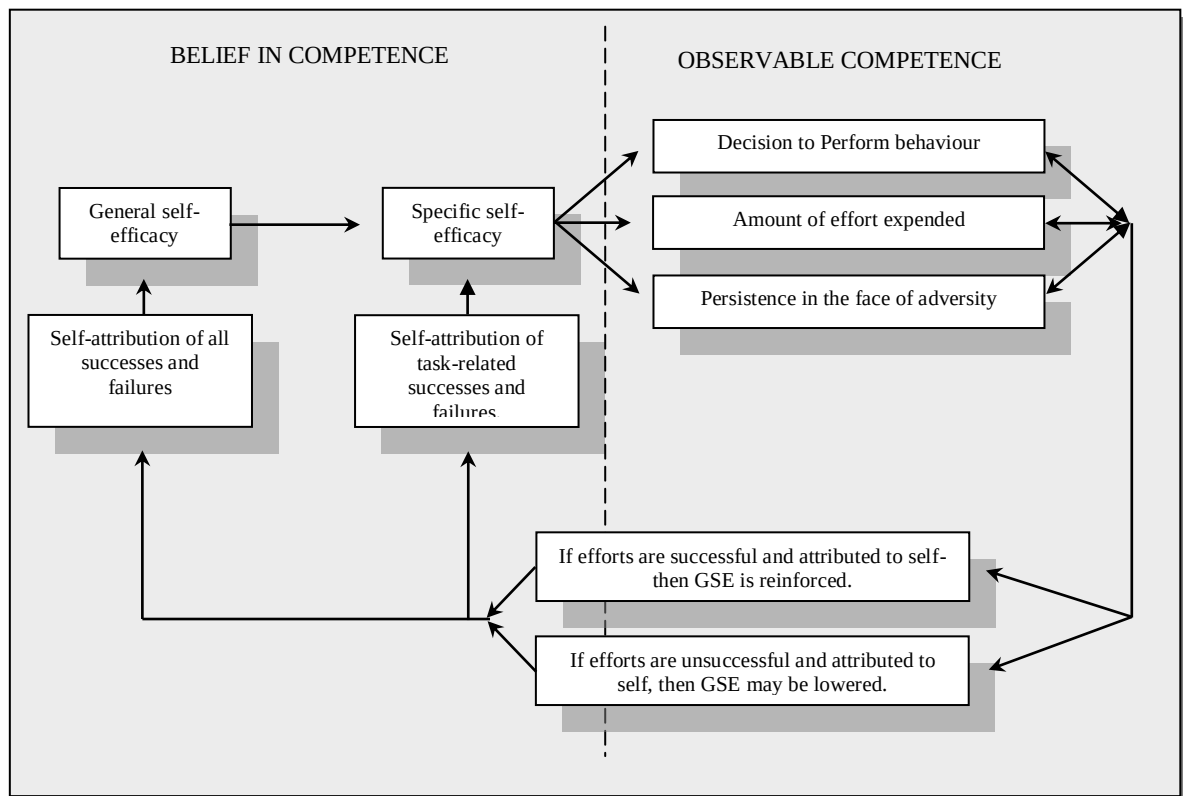


Figure 2.1 - Relationship between general and specific self-efficacy (Shelton, 1990)

Bandura did not dispute the notion that self-efficacy beliefs may generalise to other situations; however, his theory does not consider self-efficacy to be a global construct (Weinberg, Gould & Jackson, 1979). As outlined above, other research has concluded that general self-efficacy is a valid construct, which far from taking away from the original theory strengthens its position as the major determinant of behaviour change.

Self-efficacy and Academic Achievement

Literature that addresses self-efficacy in the field of educational research is comprehensive. Much of what has been written in this field has focused on three main areas (Pajares, 2002b). The first of these areas explores the relationship between self-efficacy beliefs and the choices of tertiary majors and career choices. The second area is concerned with teacher self-efficacy and its impact on instructional practices, and the third area studies student self-efficacy and other related constructs in relation to academic motivation and achievement (ibid). It is this last area that is the focus of the present study.

In terms of academic achievement, results of studies have shown that there is a significant relationship between self-efficacy and academic performance (Wood & Locke, 1987; Multon, Brown & Lent, 1991). Research in this area supports the notion that self-efficacy beliefs impact on student's effort and persistence (Pajares, 1996), however, it is unlikely to influence the educational choices made by students because they typically do not choose the subjects and learning activities they participate in (Shunk, 1991). Self-efficacy theory also indicates that personal beliefs of self-efficacy in relation to a specific task are strong predictors of performance in that task (Bandura, 1977; 1994). Lent and his colleagues (1984 & 1986) conducted studies that support this aspect of the theory in terms of academic achievement. Their results indicated that student self-efficacy beliefs are "related to indices of academic performance" (Lent, Brown & Larkin, 1986).

Self-efficacy has also been studied in terms of its relationship with academic motivation. Self-efficacy is a predictor of motivation across different levels of student ability. In a study conducted by Collins (1982 in Shunk, 1991), students were separated into three ability levels and within each level, classified as low or high in self-efficacy. Results showed that within each ability level, students rated with higher self-efficacy would persist with difficult problems longer than students with low self-efficacy.

Summary

Academic achievement is valued in society and there are many factors that impact on an individual's educational experience and academic achievement. Sport and self-efficacy are two such examples. This chapter has discussed the literature surrounding each of these aspects: academic achievement, sport and physical activity and self-efficacy theory. The following chapter will provide a basis for a proposed causal model whereby relationships between these aspects are explored.

Chapter 3

A Causal Model

Introduction

The aim of the current chapter is to present a theoretical foundation for the development of a causal model. Firstly, causal models will be discussed, and then the chapter will progress to identify the variables to be included in a general model of analysis. The hypothesised relationships between variables in the general model will be discussed in light of relevant literature and a final, more detailed model will be presented. The development of this causal model will provide a basis upon which to identify specific research questions.

The Model

Causal models have been used increasingly in educational research since the early 1970's (Keeves, 1988). They seek to “present hypothesised relationships between theoretical constructs” (Beamish, 1998, p 101) and path analysis is used to investigate interrelationships between variables (Keeves, 1988). Causal models are designed to increase understanding of proposed relationships (Bourke, 1984) and such relationships should arise from a theoretical basis rather than from mathematical reasoning (Beamish, 1998). In summary causal models are useful analytical tools for examining relationships between variables of interest (ibid).

Upon conducting a review of the relevant literature (Chapter 2), it was considered that evidence existed to support the inclusion of a range of variables in a proposed model. The variables included student background factors, student intermediate variables, and student outcome variables. The model was developed to test possible causal relationships between these variables. Within this model it is proposed that background factors will directly influence intermediate and outcome variables, and intermediate variables will influence outcome variables.

Figure 3.1 identifies the general model with the flow of causality moving from left to right.

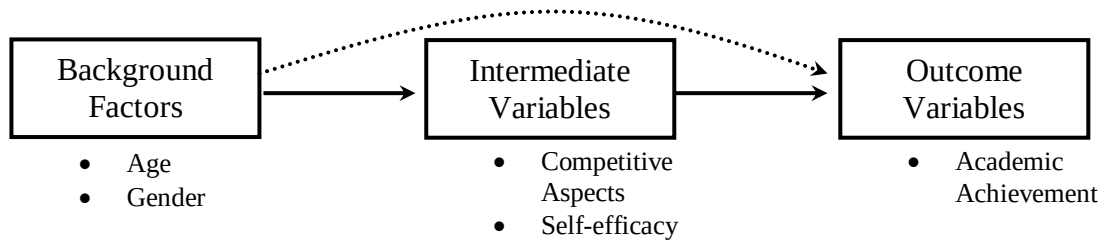


Figure 3.1 - The General Model

It is important at this stage to note that the proposed model is not the only possible explanation for a relationship between the variables. It is recognised that this is but one of variety of possible logical relationships that could be developed and tested.

Variables

Twelve variables were identified to be included in the model: three background variables, six intermediate variables and three outcome variables. These variables are shown in Table 3.1.

Table 3.1 - Proposed Variables in Causal Model

<i>Background Variables</i>	<i>Intermediate Variables</i>	<i>Outcome Variables</i>
Age	Competitive Sport Involvement	PD/H Achievement
	Competitive Sport Enjoyment	
Year of schooling	Competitive Sport Success	English Achievement
	General Self-efficacy	
Gender	Academic Self-efficacy	Maths Achievement
	PD/H Self-efficacy	

It is assumed that age and year of schooling are strongly related. With the exception of the gifted few, younger people are in lower years of schooling and vice versa. To reduce problems associated with co-linearity it was decided to include only age in

the final model. The outcome variables English Achievement and Maths Achievement were grouped together to form the variable of Academic Achievement. A schematic representation of the proposed relationships between the variables is shown in Figure 3.2.

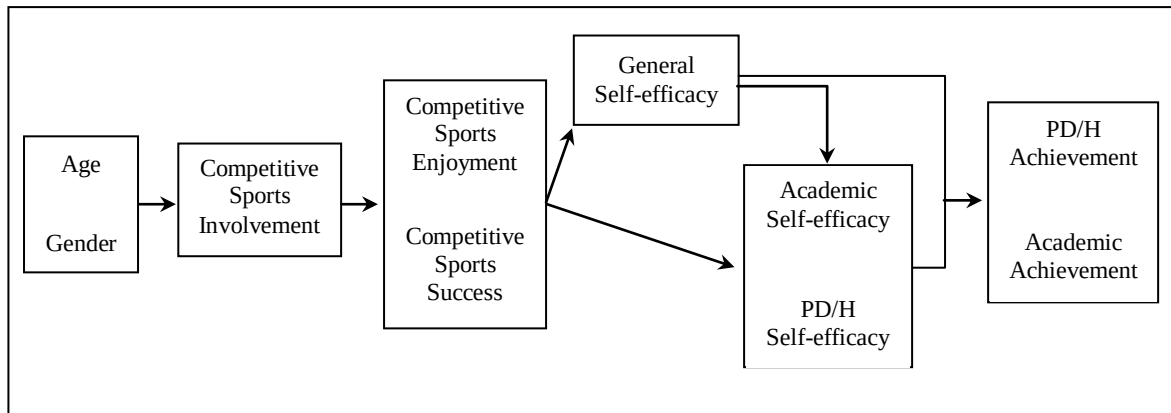


Figure 3.2 - Proposed Causal Model

Defining the Constructs

The remaining section of this chapter will provide a theoretical basis for the model. It will provide evidence from existing literature to support the proposed relationships as evident in the above model.

Background Variables

The background variables of age and gender were included the proposed model.

Age

Age has been found to be an influential factor in a number of areas. Allison, Dwyer & Makin (1999) found older students to be less likely to be involved in vigorous physical activity. They suggest that this is possibly due to increased academic and social demands (ibid). It is therefore expected that a direct path will exist between age and Competitive Sports Involvement. Gould, Feltz and Weiss (1985) studied motives for participation in swimming and found that younger adolescents participate because of external influences such as achievement status, parental influence or for 'something to do'. From this, it is possible that because motivation to participate in sport for younger people is less intrinsic, their enjoyment in sport

may be less than older subjects, thus it is anticipated that there be an age-effect with Competitive Sports Enjoyment.

Gender

It is expected that there will be a direct path between gender and each of the competitive aspects of the model, involvement, enjoyment and success. In many ways sports are regarded as a male domain. This is clearly visible in a statement made by Pierre De Coubertin, founder of the modern Olympic games

“The Olympic games must be reserved for men...solemn and periodic exaltation of male athleticism, with internationalism as a base, loyalty as a means, art for it's setting and female applause as it's reward.” (Quoted in Cohen, 1993. Cited in Koivula, 1999)

This patriarchal view still influences the way sport is viewed by the genders. It impacts motives and outcomes of participation, and time allocated to involvement Koivula (1999). Males consistently score higher on measures of competitiveness, win orientation and involvement in competitive sport (Gill, 1988). Both genders appear to enjoy participating in sport and are equally oriented towards achievement, however males are more likely to place emphasis on winning whereas females are more oriented towards achieving personal goals.

Intermediate Variables

The intermediate variables included in the model are those relating to competitive sport (Involvement, Enjoyment and Success) and self-efficacy (General, Academic and PD/H)

As previously established, self-efficacy is a belief about ones capabilities to perform. It determines choice of activities, effort and persistence (Bandura, 1986). Thus, people with high self-efficacy tend put more effort and persistence into their chosen activities allowing them to perform at a higher standard than people whose self-efficacy beliefs are low.

Chase (2001) states that self-efficacy has a reciprocal relationship with performance in athletic involvement. Self-efficacy beliefs specific to physical activity are strongly

related with participation in vigorous physical activity (Allison, Dwyer & Makin, 1999) and a positive moderate relationship (Correlation coefficient 0.38) has been established between self-efficacy and sport performance (Moritz et al, 2000). The strongest sources of self-efficacy beliefs are from successful personal experiences (Bandura, 1977). Thus it is expected that a positive path will be present between competitive sports success and the variables General Self-efficacy and PD/H Self-efficacy.

In a study of senior high school students, Field, Diego & Sanders (2001) found that students who rated higher on levels of exercise habits had higher grade point averages (GPA's) than students with low exercise habits. Jordan (1999) also found that participation in both individual and team sports has small but significant positive impact on GPA. He suggests that a possible explanation for the affect that participation in sport has on student achievement is that involvement in sport increases student overall interest and commitment to school, encourages more positive attitudes about school and provides greater opportunities for parent-school contact (ibid). It is anticipated therefore, that a path will exist between Competitive Sports Involvement and both achievement variables.

In a review of current literature surrounding self-efficacy in academic settings, Pajares (1996) states that self-efficacy beliefs are correlated to many aspects of life. Much research has been conducted establishing a link between concepts of self-efficacy and academic achievement (Pajares, 1996; Wood & Locke, 1987; Lent, Brown & Larkin, 1986; Watt & Martin, 1994). In a study on mathematics achievement and self-efficacy (Collins, 1982 cited in Pajares, 1996) students were divided into high, medium and low ability groups and within each group designated as having either high or low self-efficacy. In each of the three ability groups, subjects with high self-efficacy answered more problems correctly and persisted longer with difficult questions. In a study of 105 undergraduates, Lent, Brown & Larkin (1986) also divided subjects into high and low self-efficacy groups and likewise found that high self-efficacy students scored higher on measures of academic achievement and persistence than their low self-efficacy counterparts. From such evidence, a causal path is anticipated between self-efficacy beliefs and the outcome variables PD/H Achievement and Academic Achievement in the model.

Self-efficacy theory was originally theorised as a task-specific construct (Shelton, 1990; Watt & Martin, 1994), and self-efficacy measures specific to a task are most strongly correlated to performance in that task (Moritz et al, 2000). It is expected that there will be paths between general and specific self-efficacy and academic achievement, and that more specific self-efficacy measures will have a larger influence on corresponding achievement variables. That is, a strong path is expected between PD/H Self-efficacy and PD/H Achievement and between Academic Self-efficacy and Academic Achievement.

General Self-efficacy

General Self-efficacy is the composite of a persons lifetime successes and failures (Shelton, 1990). As established in Chapter 3, a person's sense of general self-efficacy informs their specific self-efficacy, which in turn has a strong relationship to specific tasks (ibid). The construct of general self-efficacy satisfactorily explains why some people appear to be more confident about life (ibid). Watt & Martin (1994) found general self-efficacy to be significantly correlated with performance in specific tasks. Thus, it is expected that in line with research on general self-efficacy, a path will be evident between General Self-efficacy and the two more specific measures of academic and PD/H Self-efficacy. Also, it is anticipated that there be a direct path between General Self-efficacy and both achievement outcome variables.

Outcome Variables

Achievement in academic areas is an important focus of schools as outlined in the Adelaide Declaration (1999). Academic achievement has been used as an outcome variable in many studies (Schumaker, Small & Wood, 1986; Jordan, 1999; Field, Diego & Sanders, 2001; Lent, Brown & Larkin, 1986; Pajares, 1996). This would indicate that high achievement in this area is seen as important. Thus, the academic achievement variables are the final considerations in the causal model.

As already discussed, the expected paths leading to the outcome variables are from the variables of competitive sports involvement, general self-efficacy, academic self-efficacy and PD/H self-efficacy with particularly strong paths present between PD/H Achievement and PD/H Self-efficacy as well as Academic Self-efficacy and Academic Achievement.

The specific model for analysis

The theoretical framework for the study has been summarised in this chapter. This has been done by proposing the integration of background, intermediate and outcome variables into a causal model. The intention for using a causal model in this study is to increase understanding of, and test hypothesised relationships between variables. This chapter has discussed these relationships in light of the literature reviewed in the previous chapter. The final model for analysis is presented in figure 3.3.

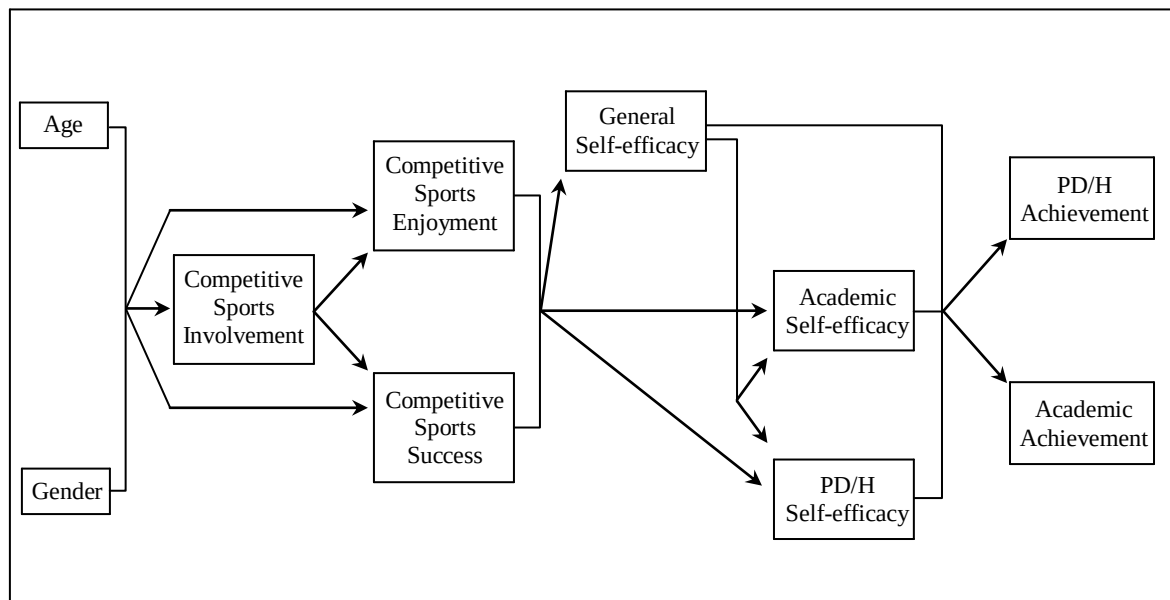


Figure 3.3 - The Specific Model for Analysis

Research Questions

Arising from the development of the proposed causal model are a number of research questions that this study has set out to answer. The questions addressed in this study are divided into two groups. The first group of four questions form the major focus of the study. The second group comprised of two questions addresses some important subsidiary components of the study.

Major Questions

1. Does involvement in competitive sports influence a person's academic achievement?

2. Is there a relationship between competitive sports involvement and self-efficacy?
3. Is there a relationship between enjoyment and success in competitive sport and self-efficacy?
4. To what extent does self-efficacy influence academic achievement?

Subsidiary Questions

5. Does general self-efficacy influence more task-specific self-efficacy?
6. To what extent do background factors influence involvement and attitudes to competitive sport, self-efficacy and academic achievement?

Chapter 4

Methodology

Introduction

We live in a society that is largely success oriented. People are constantly striving to succeed in many areas whether it be corporately, politically, academically, financially, or in the world of sport. Regardless of what area people are striving for, competitiveness is an important component that contributes to a person's success. This study investigated whether a person's involvement in competitive sport has a significant impact on their academic success in school. The previous chapter has proposed a model, which shows how different variables are related to achievement. This chapter will discuss the study's design and research methodology as it seeks to test the proposed model. Firstly, it will discuss the sample of the study, then move on to the instruments used to collect the necessary data, and finally the chapter will look at the analysis used to test the proposed model.

Participants

The Population

The population for this study was made up of secondary school students in the Seventh-day Adventist education system. They were selected as research into this aspect of schooling has not previously been completed in a Seventh-day Adventist school setting.

The Sample

The sample for this study was comprised of students from three Seventh-day Adventist high schools in New South Wales. The three schools were selected due to their physical proximity to the principal researcher.

There were 619 students included in the study. The students came from year seven to year twelve and their ages ranged from 11 to 18 years.

Initial contact with the schools was made through the Principal to gain permission to collect data from students within each school. Subsequent contact was made with the head of the Physical Education department of each school to arrange for the data collection.

The Physical Education department was used because the study related more strongly to them than other departments within the school and it was perceived that the teachers from that department would be more willing to contribute. It was also thought that if the data were collected from students during health classes their mindset would align more closely with the information being asked of them.

The primary instrument used for the collection of data for this study was a questionnaire and this will now be considered in more detail.

The Questionnaire

Stake (1995) comments that the nature of the questions developed in a study will largely determine the methods employed in the gathering of information. The purpose of this study was to examine relationships between variables of interest. It was considered that the best-suited method for data collection considering the nature of the study was to use a questionnaire.

The questionnaire used for this study was comprised of three main sections and is included in Appendix A.4. The main purpose of the questionnaire is to collect data relating to students involvement in competitive sport, their self-efficacy and academic achievement. Items were answered using a likert-response scale. The instrument contained a number of sub-scales and where available, scales developed for previous research were used. Scales did not exist for measuring aspects of competitive sport, PD/H specific self-efficacy, and academic achievement in PD/H, English or Mathematics. These items were constructed by the principal researcher.

Each of the three main sections of the questionnaire will now be considered in more detail.

Background Factors

The questionnaire was used to collect demographic type data including age, gender, year of schooling and religion. With the exception of age, students gave responses to these items by indicating with a circle their response from the given options. Age was provided by written response.

Intermediate Variables

There were six intermediate variables included in the questionnaire divided into two sub-groups. The first sub-group was concerned with the competitive sports aspect of the study, while the second group gathered data relating to the students sense of self-efficacy.

1. Competitive Sports – Involvement, Enjoyment & Success

Information regarding competitive sport was divided into the three areas of; student involvement in competitive sport, level of enjoyment and how successfully students compete. The first section of the questionnaire was comprised of 31 items designed by the researcher. The first fifteen items of this section were designed to collect data on the level of student involvement in competitive sport. The next eight items were to identify student enjoyment of competitive sport and the final eight items were to gauge student's level of success at competitive sport. With the exception of the first five items, the response scale used the following format: 1 (Totally Disagree), 2 (Somewhat Disagree), 3 (Neutral), 4 (Somewhat agree) and 5 (Totally Agree). The first five items used the format of: 1 (Never), 2 (Rarely), 3 (Occasionally), 4 (Frequently) and 5 (Very Frequently).

2. Self-efficacy – General, Academic & Specific PD/H/PE

Section II of the instrument collected data indicating student's level of self-efficacy. It was comprised of 53 items containing three sub-scales. Responses were collected using a likert scale in the following format: 1 (Totally Disagree), 2 (Somewhat

Disagree), 3 (Neutral), 4 (Somewhat agree) and 5 (Totally Agree). The first sub-scale was comprised of 17 items and was sourced from Sherer et al (1982) for the purpose of measuring student's level of general self-efficacy. The second sub-scale was comprised of 29 items and was sourced from the *Morgan-Jinks Student Efficacy Scale* (Jinks & Morgan, 1999). The scale is designed to assess the level of student general academic self-efficacy. The two scales were originally constructed in a different population to this study. Consequently, the scale was reviewed and modified in order to make it more relevant and applicable to students in this population. The modifications involved re-wording some statements and changing the subject names for example, social studies to PD/H/PE. The third sub-scale was constructed by the principal researcher for the purpose of obtaining a measure of students' self-efficacy in relation specifically to the subject of Personal Development, Health and Physical Education. The items in this scale were modified items from the previous Morgan-Jinks scale and adapted to relate specifically to the subject of PD/H/PE.

Outcome Variables

The study required the collection of data on student academic achievement. It was decided to ask students to self-report on their achievement. This method is suitable for use in a study of this nature, as it has been found to be a relatively accurate measure of performance in academic areas (Wilson & Wright, 1993; NSSE, 2002). This approach also satisfied ethical issues associated with accessing student records and minimized teacher workloads. The purpose of section III was to collect information relating to students academic achievement for the subjects of PD/H/PE, English and Mathematics. These subjects were chosen for the following reasons.

1. Personal Development and Health (PD/H)

PD/H was included as it is central to the study. The previous section collected data relating to student self-efficacy specific to PD/H and it was important to collect data for academic achievement for this subject so the relationship between the constructs could be investigated.

2. English and Mathematics

The NSW state government has identified numeracy and literacy as two areas of academic importance. It was decided to collect data for achievement in English and Mathematics as this would be a strong indicator of academic achievement.

Each of the scales was comprised of four items and responses were given using a likert scale format. Unlike sections I and II, which used a 5-point scale, each item on the achievement scales used a different answer format. Q1 on each of the three scales used a 3-point format, Q2, 6-points, Q3, 5-points, and Q4 a 4-point format.

Ethics Approval

Prior to administering the questionnaire, and commencement of data collection, approval was sought from the Avondale College Human Research Ethics Committee (HREC). The required form was completed stating information on research aims, hypothesis, design, procedures and storage of data. This was submitted with a letter of endorsement from the Faculty of Education, and a copy of the instrument to be used in the collection of data. Approval was granted outlining some considerations to be addressed, namely: a letter of permission be sent to parents prior to the questionnaire being administered, a definition of 'efficacy' to be included on the instrument, and inclusion of the HREC paragraph as part of the main body text on the cover letter, rather than an 'add-on' at the bottom of the page.

Pilot Testing

After the questionnaire was developed and ethics approval granted, a pilot test was performed in order to gain a working knowledge and external feedback about the instrument. In particular, feedback was obtained on the length of time taken to complete the questionnaire, the language level and the layout. Some basic data analysis was run on the responses in order to fine tune and strengthen the instrument before use in the main study. The pilot questionnaire was administered to a class of 35 first-year tertiary education students. Ages ranged from 18 to 37 and the genders were evenly represented. Data analysis was performed using SPSS v11 Grad Pack

(Norusis, 1993). Analysis conducted included factor analysis and reliability testing to gain an initial understanding of the strength and integrity of the items and sub-scales. Results of the data analysis are provided in Appendix B.

Data Collection

Once the final changes to the instrument were made, and after obtaining permission from the participating schools, the administration of the questionnaire for the main study was collected over a period of two weeks at the end of term 2 of 2003. It was agreed upon between the principal researcher and the Head of the PE Department at each of the three schools that the questionnaire would be administered to all students during their normal timetabled PD/H classes. As previously mentioned, the subject area is also strongly related to the nature of the study and it was decided that students would find it more relevant completing the questionnaire during this class than others.

This approach provided the most workable means of collecting data from a high percentage of students attending the school. It was also agreed that the administering of the questionnaire would be done under supervision of the teaching staff at the school. Due to this, an information sheet was provided as a cover page to the questionnaire providing background information about the study. Guidelines for the administering and collection of the questionnaires were also provided to the supervising teachers.

Data Analysis

Upon collection of the questionnaires from the schools, the data were coded and entered into a spreadsheet program and imported into SPSS v.11 grad pack (SPSS Inc, 2001). Descriptive analyses were carried out on the items and scales were constructed using principal component factor analysis extracting one factor for each of the scales. Results of the analysis are provided in chapter 5. In order to maximise the strength of the scales, factors that loaded with a coefficient less than 0.3 were discarded. Items were deleted one by one, and the analysis re-run after each deletion, until each factor loaded above 0.3. Reliability was checked by calculating Cronbach's Alpha to ensure scale reliability. This process was repeated for each

scale. Once factor analysis was completed the scales were constructed by combining the relevant items into new variables. In the case of the academic achievement scales, where the scale items did not have a natural metric, the factors were turned into composite scales by averaging all item scores across the factor thus giving a scale ranging from 1 through to 4.5.

Following the development of the constructs, multiple linear regression was employed in a backward stepwise process whereby scales with regression coefficients that were not significant at the 0.05 level are removed. The standardised regression coefficients calculated were then inserted into the model to establish the strength of both direct and indirect relationships between variables within the model. In order to avoid including weak paths in the model, variables with standardised regression coefficients less than 0.1, either positive or negative, were excluded from the model. The results of these analyses are discussed in chapter 6.

Summary

This chapter has provided a discussion of the methodologies used in this study. In particular, the chapter discussed the identification of the participants, the development of the instrument, ethics approval and the analysis of collected data. The following chapter will provide a discussion of the results obtained from statistical analysis.

Chapter 5

Results

Introduction

Before proceeding to consider the relationships between the variables in the proposed model, it is informative to look at the responses from the individual students. This chapter presents a descriptive analysis of the data obtained from the 619 students who participated in the study. The chapter will analyse the results in two parts. Firstly, a profile of the students will be developed, and secondly the construction of composite variables will be discussed.

Return Rates

There were 750 questionnaires sent out to the three participating schools. Of these, 619 students returned useful data. This represents an acceptable return rate of around 80 percent.

Background Factors

As established in the previous chapter, the background factors for this study were gender, age, year of schooling, school and religion. The following section will review these variables to provide a profile of the students who participated in this study.

Gender

Of the 619 participants, 45.9%¹ were male (N=284), and 47.5% were female (N=294). The remaining group (6.6%, N=41) did not specify their gender. Although there were slightly more female participants there was quite an even distribution between the genders.

¹ All percentages used in the discussion of results are expressed to 1 decimal place.

Age

The ages of participants in this study ranged between 11 and 18 years with an average age of participants in this study of 14 years¹. (Figure 5.1)

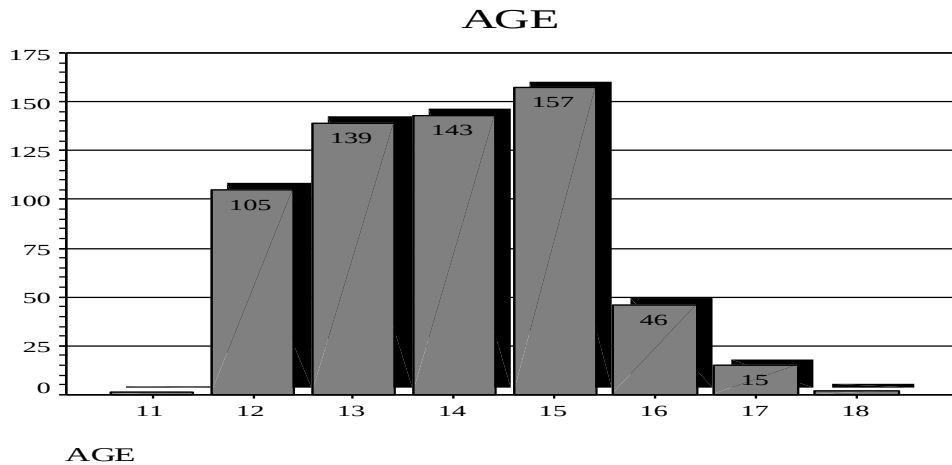


Figure 5.1 - Distribution by Age

Year of Schooling

Students from year 7 through to year 12 were represented in this study. There was a fairly even representation from years 7 through to 10 with the largest year group from year 9, (25.8%, N=160). The senior years, year 11 and 12, had a small number with 21 year 11 students and 9 year 12 students (Figure 5.2). This was due to the fact that, in the senior years, PD/H/PE is an optional subject rather than mandatory as is the case for years 7 through 10.

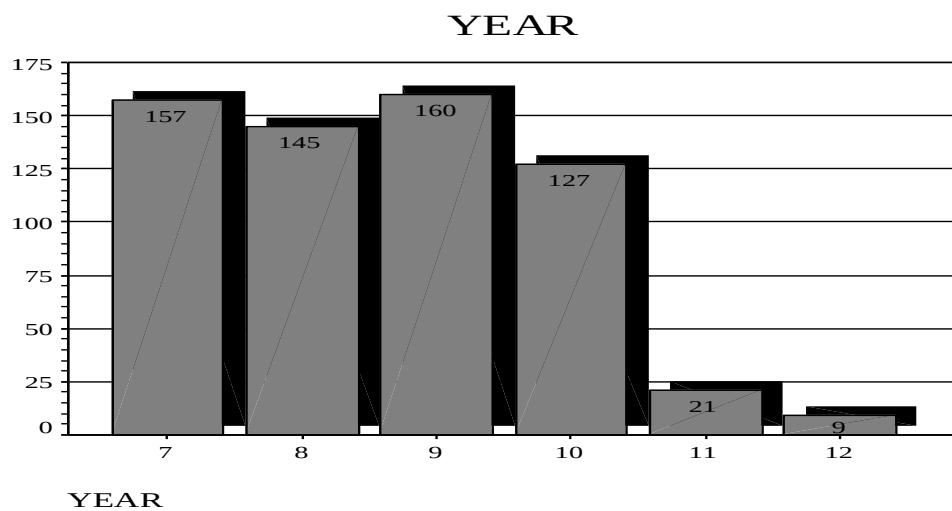


Figure 5.2 - Distribution by Year in School

¹ Expressed to the nearest year.

School Representation

The distribution between the three participating schools was fairly even, with school 2 having the largest contribution of 37.0% (N=229). Schools 1 and 3 represented 31.3 % (N=194) and 31.7% (N=196) respectively.

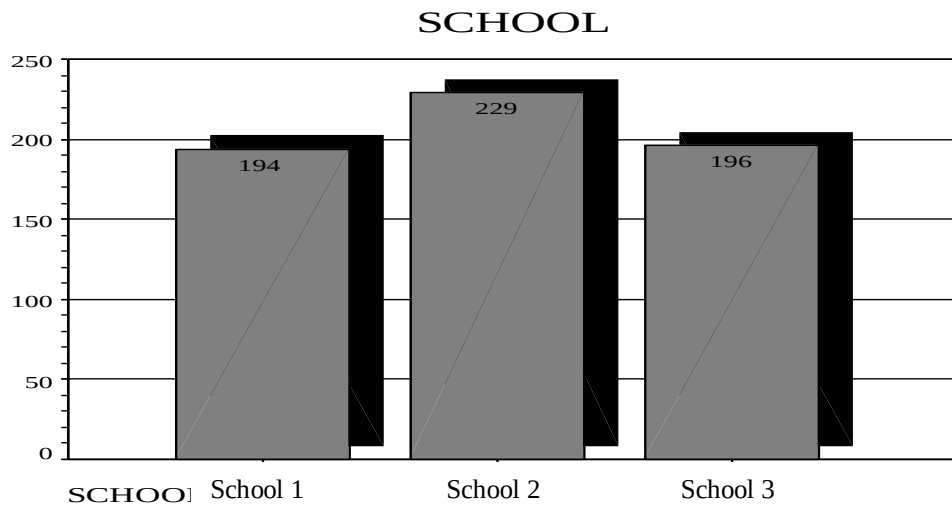


Figure 5.3 - Distribution by School

Religion

Students came from a variety of religious backgrounds. Seventh-day Adventists made up the largest group in the sample, 32.6% (N=202). This is to be expected, as the three schools making up the sample were Seventh-day Adventist schools. 19.9% (N=123) of respondents did not specify a religion, indicating 'Christian' as their response to this item. 6.1% (N=38) responded 'Other' indicating either a religion not represented in the options given, or a non-Christian religion.

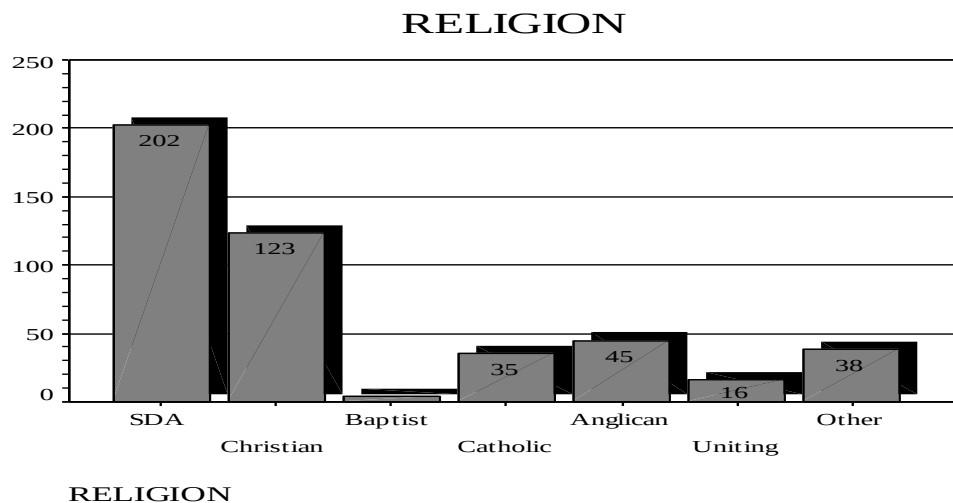


Figure 5.4 - Distribution by Religion

Type of Sport

The first item in section I of the questionnaire asked students to indicate whether the main type of sport they competed in was an individual or a team sport. The majority, 58.0%, of respondents indicated that they participate in mainly team sports (N=359).

Construct Development

Eight constructs were developed from the questionnaire for use in the causal model. They are: Competitive Sports Involvement (CSI), Competitive Sports Enjoyment (CSE), Competitive Sports Success (CSS), General Self-efficacy (GSE), Academic Self-efficacy (ASE) and PD/H Self-efficacy (PSE). The final two were academic achievement in PD/H (PD/H) and a combined measure for academic achievement in English and Mathematics (Ac.Ach). The procedures involved in the development of the constructs are outlined in Chapter 4. The means, standard deviations, maximum and minimum values for each construct are shown in table 5.1. The results for the composite scales are discussed below.

Table 5.1 - Descriptive Statistics for all Constructs

		CSI	CSE	CSS	GSE	ASE	PSE	Ac.Ach	PD/H
N	Valid	619	618	618	617	619	619	530	533
	Missing	0	1	1	2	0	0	89	86
Mean		3.3	3.6	3.7	3.6	3.6	3.5	3.3	3.3
Median		3.5	3.7	3.6	3.6	3.6	3.4	3.4	3.3
Std. Dev.		1.04	0.92	0.82	0.64	0.61	0.79	0.71	0.75
Range		4	4	4	3.8	3.2	3.9	3.5	3.5
Min.		1	1	1	1.25	1.73	1.14	1	1
Max.		5	5	5	5	4.9	5	4.5	4.5

Competitive Sports Involvement

As is suggested by its title, this scale measured the level of student involvement in competitive sport. It was constructed from the first 14 likert-response questions of section I. The results of the factor analysis are shown in Table 5.2. The reliability of the final scale was good at $r = 0.92^1$.

¹ All reliability alpha's reported in the discussion of results are expressed to 2 decimal places.

Following the construction of the scale, the items were averaged to form a new construct called *Competitive Sports Involvement (CSI)*.

Table 5.2 - Factor Loadings for Competitive Sports Involvement

Competitive Sports Involvement (CSI), Alpha = 0.92		
Q.	Item	Loading
I4	How often do you play competitive sport outside of school?	.882 ¹
I10	I participate in competitive sport out of school hours	.861
I14	I play competitive sport on weekends	.831
I5	How often do you play competitive sport on the weekends?	.821
I6	I participate in sport of a competitive nature on a regular basis	.789
I11	I play competitive sport at least three (3) times a week	.775
I9	I participate in competitive sport almost every day	.753
I13	I hardly ever play competitive sport	.653
I3	How often do you play competitive sport at school outside of PE classes?	.635
I12	The only competitive sport I am involved in is PE classes and weekly school sport	.608
I1	How much do you play competitive sport at school?	.526

The CSI construct produced a mean of 3.3² (S.D.=1.04³) This indicates that on a scale ranging between 1 (Never) and 5 (Very Frequently) students reported that they participate a little more than occasionally in competitive sports. The maximum level of participation indicated by students was 5 (Very Frequently). A graphical representation of this is shown in figure 5.5 displaying box plots for the constructs, CSI, CSE, CSS, GSE, ASE and PSE.

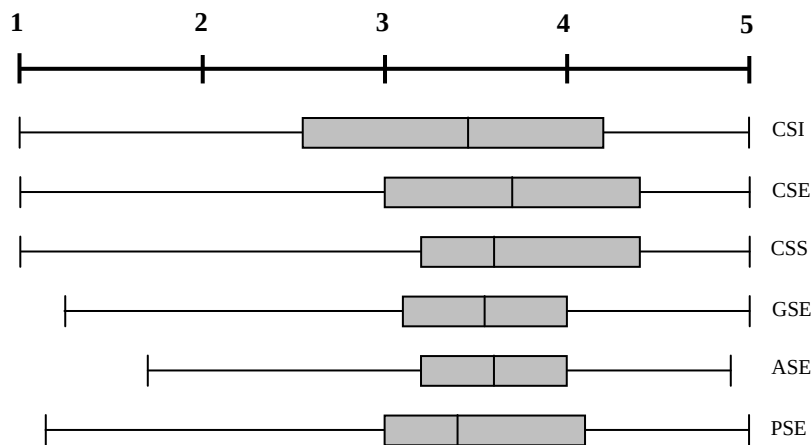


Figure 5.5 - Box Plots showing the distribution of responses for the scales CSI, CSE, CSS, GSE, ASE and PSE set against the likert-scale metric

¹ All factor loadings are expressed to 3 decimal places.

² Mean values reported are expressed to 1 decimal place.

³ All standard deviations are expressed to 2 decimal places.

Competitive Sports Enjoyment

Designed to measure the level of enjoyment students experienced from involvement in competitive sports, this scale was constructed from the second eight items from section I of the questionnaire. Similar to CSI, factor loadings and reliability ($r = 0.82$) meant that the scale was suitable to be used in the present study (Table 5.3).

Table 5.3 - Factor Loadings for Competitive Sport Enjoyment

Competitive Sports Enjoyment (CSE), Alpha=0.82		
Q.	Item	Loading
E5	I really enjoy playing competitive sport	.776
E6	I would play competitive sport at school even if it wasn't part of my PE classes	.775
E4	I would rather watch a movie than participate in competitive sport	.745
E2	I do not at all enjoy playing competitive sport	.711
E7	I would rather read a good novel than play competitive sport	.660
E1	The reason I participate in competitive sport during PE classes is because I feel that I have to	.631
E3	I play sport of a competitive nature at lunch times	.563

Upon scale construction, the items were averaged to form the construct of *Competitive Sports Enjoyment (CSE)*. The mean for this construct was 3.6 (S.D=0.92), indicating that, on a scale between 1 (Do Not Enjoy) and 5 (Do Enjoy) with 3 indicating a 'neutral' response, that on average students tend to agree that they enjoy participating in competitive sport.

Competitive Sports Success

Having designed scales to measure student participation and enjoyment in regard to competitive sport, it was desirable to measure their level of success in competitive sport as this may have an affect on self-efficacy. The *Competitive Sport Success (CSS)* scale was created by analysing data from the last eight items from section I of the questionnaire using principal component factor analysis. A one factor solution was obtained and the factor loadings are displayed in table 5.4. Reliability for this scale was the lowest of the three competitive sports scales, however at $r = 0.77$, it was still considered suitable for inclusion in this study.

Table 5.4 - Factor Loadings for Competitive Sport Success

Competitive Sports Success, Alpha=0.77		
Q.	Item	Loading
S3	When I compete in sport, I nearly always lose	.764
S6	When I compete in sport, I usually do well	.761
S7	I am a below average competitor	.723
S5	My team usually loses when I compete	.687
S1	When I compete in sport, I mostly win	.679

Data from this scale returned a mean of 3.7 (S.D=0.82). The range of possible answers for this scale was from 1 (Unsuccessful) to 5 (Successful). The mid-point, 3, indicated a 'Neutral' response. Thus, a mean of 3.7, suggests that students are moderately successful when they are involved in competitive sport.

Self-efficacy

The second set of intermediate variables was designed to assess the self-efficacy perceptions of students. Self-efficacy varies in regard to its level of specificity (Bandura, 1977). As a result of this it was decided to assess self-efficacy at two levels: General and Academic and PD/H-specific self-efficacy. Each of the three scales developed used a response range between 1 (Very Low), to 5 (Very High) with the middle value, 3, indicating a 'Neutral' response.

General Self-efficacy

The first of the three self-efficacy scales assessed the student's level of general self-efficacy. As mentioned earlier, this scale was an adapted version of the *General Self-efficacy Scale* (Sherer et al, 1982) and made up 17 of the 53 items in section II of the questionnaire. In this study each item contributed to the overall strength of the scale, with the exception of item G15, which was deleted. The scale returned factor loadings from 0.377 to 0.745 and the loadings for GSE are shown in table 5.5 below. Reliability analysis returned a Cronbach's Alpha value of $r = 0.85$. This is in line with the reliability values returned in the original scale by Sherer et al (1982) which returned a reliability of $r = 0.86$ (Cronbach's Alpha). The 17 items were averaged to form the construct of *General Self-efficacy (GSE)*.

Table 5.5 - Factor Loadings for General Self-efficacy

General Self-efficacy, Alpha=0.85		
Q.	Item	Loading
G16	I give up easily	.745
G7	If something looks too complicated, I will not even bother to try it	.707
G5	I give up on things before completing them	.688
G12	I avoid trying to learn new things when they look too difficult for me	.682
G4	When I set important goals for myself, I rarely achieve them	.655
G10	When trying to learn something new, I soon give up if I am not initially successful	.614
G14	I feel insecure about my ability to do things	.590
G17	I do not see capable of dealing with most problems that come up in life	.552
G3	If I can't do a job the first time, I keep trying until I can	.543
G6	I avoid facing difficulties	.466
G11	I don't handle unexpected problems well	.464
G13	Failure just make me try harder	.449
G1	When I make plans, I am certain I can make them work	.431
G2	One of my problems is that I cannot get down to work when I should	.413
G9	When I decide to do something, I go right to work on it	.381
G8	When I have something unpleasant to do, I stick to it until I finish it	.377

Student responses for GSE returned a mean value of 3.6 (S.D=0.64), which, on a scale from 1 – 5, means students tend to have positive levels of general self-efficacy.

Academic Self-efficacy

The second of the three self-efficacy scales was aimed at measuring a more specific aspect of self-efficacy. It measured student's self-perceptions of efficacy in terms of their academic achievement. The scale consisted 29 of the items from section II of the questionnaire. As discussed in chapter 4, the scale was adapted from the *Morgan-Jinks Student Efficacy Scale* (Jinks & Morgan, 1999) and it returned loadings as detailed in table 5.6.

Reliability was adequate at $r = 0.88$, which is slightly stronger than the $r = 0.82$ that the original scale returned. After the factor analysis and reliabilities were completed, the items were averaged to form the factor of *Academic Self-efficacy (ASE)*.

ASE produced a mean of 3.6 (S.D=0.61). This indicated similar results to the GSE scale, that students have moderate positive levels of academic self-efficacy.

Table 5.6 - Factor Loadings for Academic Self-efficacy

Academic Self-efficacy, Alpha=0.88		
Q.	Item	Loading
A25	I am smart	.672
A8	I always get good grades when I try hard	.665
A26	I usually understand my homework assignments	.653
A28	My teacher thinks I am smart	.620
A6	I will complete the HSC	.610
A2	I work hard in school	.603
A12	I am one of the best students in my class	.602
A24	When the teacher asks a question, I usually know the answer even if the other kids don't	.591
A29	When I am old enough, I will go to university	.560
A27	I am a good Maths student	.543
A9	Sometimes I think an assignment is easy when the other kids in the class think it is hard	.535
A5	I am a good English student	.520
A23	It is not hard for me to get good grades in school	.520
A14	It is important to go to high school	.510
A20	I am a good reading student	.489
A4	I work harder on my homework than my classmates	.477
A10	I go to a good school	.469
A21	Teachers like kids even if they do not always make good grades	.443
A3	I could get the best grades if I tried hard enough	.440
A22	I will quit school as soon as I can	.439
A7	I am a good PD/H student	.404
A15	My classmates usually get better grades than I do	.392
A16	What I learn in school is not important	.349
A17	I usually do not get good grades in Maths because it is too hard	.325
A18	It does not matter if I do well in school	.319
A11	Adults who have good jobs probably were good students when they were kids	.310

PD/H Self-efficacy

The final scale of section II was designed to measure self-efficacy specific to the subject of PD/H. This scale was constructed using statements from the *Morgan-Jinks Student Self-efficacy Scale* modified to be specific to the subject PD/H. This scale contained 7 items, which loaded as is shown in table 5.7. Reliability for this scale was similar to the other two self-efficacy scales ($r = 0.82$). The seven items making up this scale were averaged to form the construct of *PD/H Self-efficacy (PSE)*.

The PSE Scale produced a mean value of 3.5 (S.D.=0.79), which indicated that students tended to be positive in their PD/H self-efficacy.

Table 5.7 - Factor Loadings for PD/H Self-efficacy

PD/H Self-efficacy, Alpha=0.82		
Q.	Item	Loading
P4	I am a good PD/H student	.825
P7	I am one of the best students in my PD/H class	.770
P1	I can learn PD/H content well	.764
P5	I work hard in PD/H classes	.699
P2	It is not hard for me to get good grades in PD/H	.692
P6	I could get the best grades in PD/H if I tried hard enough	.607
P3	I usually do not get good grades in PD/H because it is too hard	.449

Academic Achievement

The academic achievement scale was developed by combining the English and Mathematics items on the questionnaire. These items comprised the last eight items of the instrument. Its purpose was to provide data on measures of self-reported English and Mathematics academic achievement. The scale returned a reliability of 0.81 and loadings as shown in table 5.8. Unlike the previous constructs, each item for this construct had a different range (See Chapter 4). In the construction of this scale, the responses were added together and then divided by the number of items (8) to provide a new metric with a range between 1 and 4.5.

Table 5.8 - Factor Loadings for Academic Achievement

Academic Achievement, Alpha=0.81		
Q.	Item	Loading
MT2	From my last report, my grade for this class was	.741
EN2	From my last report, my grade for this class was	.726
MT1	Compared to the rest of the class, I rate myself as	.718
MT3	I normally do well in Maths	.709
MT4	My position in this class was	.633
EN1	Compared to the rest of the class, I rate myself as	.630
EN3	I normally do well in English	.606
EN4	My position in this class was	.594

The mean value for the scale was 3.3 (S.D.=0.71). On a scale with a range between 1 and 4.5, with a middle value of 2.75, this indicates that students report their level of general academic achievement to be positive. Box plots providing a graphical representation of the range of responses for the achievement scales are shown in figure 5.6.

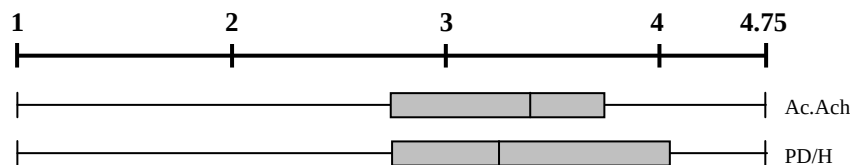


Figure 5.6 – Box plots showing the distribution of responses for the scales PD/H and Ac.Ach set against the likert-scale metric

PD/H Achievement

The PD/H achievement scale was constructed to provide a measure of self-reported achievement in the theoretical component of the subject area Personal Development/Health/Physical Education. It was constructed from the first four items of section III. The item loadings and reliability are shown in table 5.9.

Table 5.9 - Factor Loadings for PD/H Achievement

PD/H Achievement, Alpha=0.74		
Q.	Item	Loading
PE2	From my last report, my grade for this class was	.809
PE1	Compared to the rest of the class, I rate myself as	.767
PE3	I normally do well in PD/H	.767
PE4	My position in this class was	.729

Similar to the Academic Achievement scale, each of the response items had different ranges. A new metric was developed by adding each of the items together and divided by the number of items in the scale (4) to provide a minimum value of 1 and a maximum value of 4.5. The scale produced a mean value of 3.3 (S.D.=0.75), which is slightly higher than the middle value of 2.75 indicating student's report that they generally achieve highly in PD/H.

Summary

This chapter has provided a descriptive discussion of the results obtained from the analysis of data from the questionnaire. A profile of the sample was provided and the construction and results for each of the composite scales was discussed. The following chapter will discuss the results of the regression analysis and the application of the data to the causal model.

Chapter 6

Analysis

Introduction

Previous chapters have described the development of a proposed causal model to examine relationships between variables included in the study (Chapter 3). The methodology employed in the developmental process (Chapter 4) has also been discussed. A descriptive discussion of results (Chapter 5) has provided a profile of subjects. This chapter tests the strength of the proposed model. Results of multiple linear regression analysis are applied to the causal model and significant paths in the model are examined.

Regression analyses were applied to the model in five stages. The results of the analysis are shown in Figure 6.1 and the stages of analysis, including the dependent and independent variables at each stage, is outlined in table 6.1.

Differences Between Schools

Significant differences were found between schools on some of the variables included in the study. To account for school differences, two of the three schools were included in the model as dummy variables (Bourke, 1984).

Four significant paths from the school dummy variables were found. A path existed between School 1 and General Self-efficacy. The coefficient indicates that compared to the other schools, students from School 1 had higher levels of General Self-efficacy. Three paths lead from School 3, to Competitive Sports Involvement, PD/H Self-efficacy and to PD/H Achievement. The coefficients indicate that when compared to the other schools, students from School 3 do not participate as much in competitive sports, reported higher levels of PD/H self-efficacy and achievement.

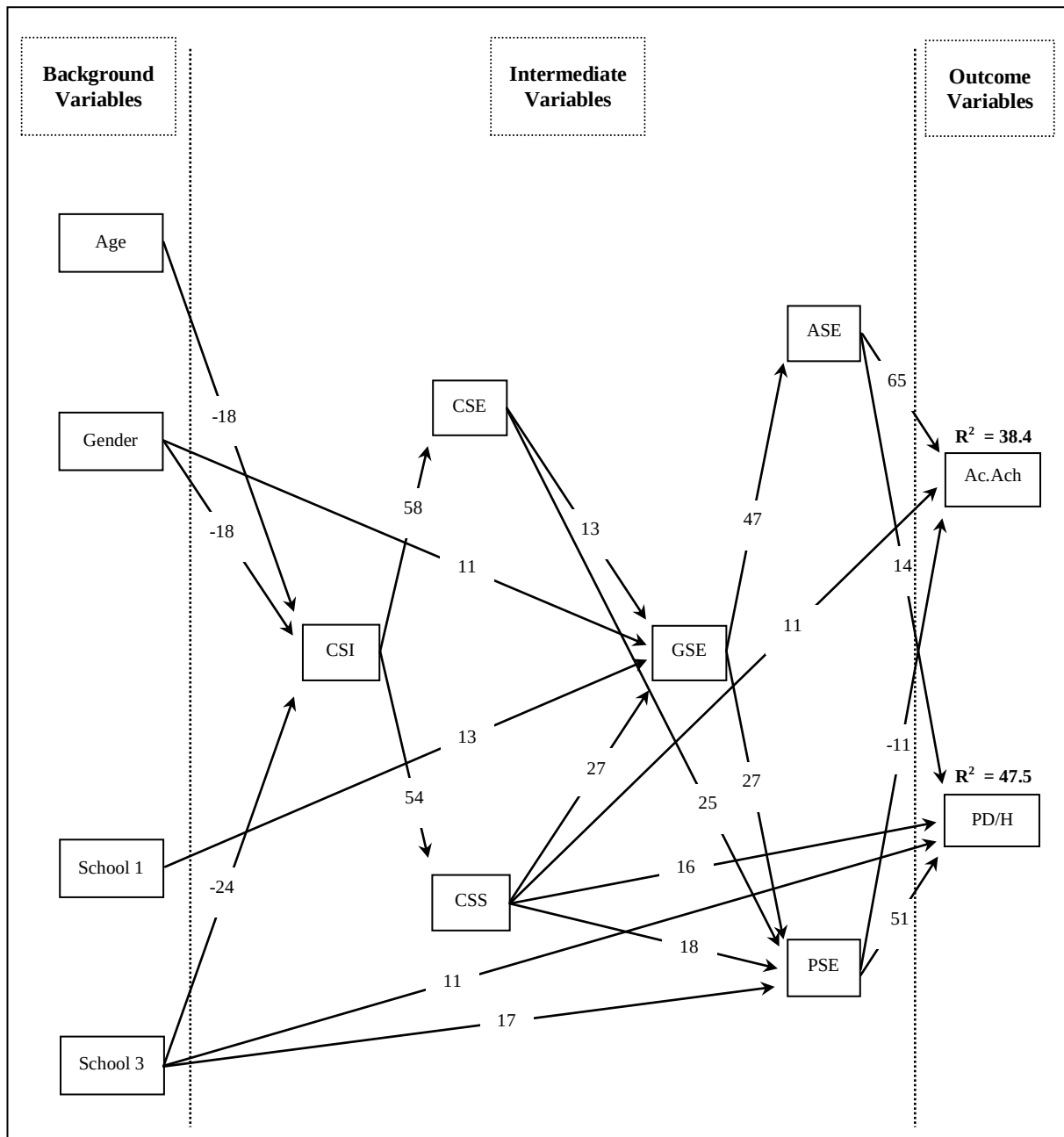


Figure 6.1 - Full Model Displaying all Significant Causal Paths ($p < 0.01$; $\beta \times 100$; $R^2 \times 100$)

Table 6.1 - Multiple Linear Regression Stages

Stage	Dependent Variables	Independent Variables
1	Outcome Variables - PD/H Achievement - Academic Achievement	- PD/H Self-efficacy - Academic Self-efficacy - General Self-efficacy - Competitive Sports Enjoyment - Competitive Sports Success - Competitive Sports Involvement - Age - Gender - School 1 - School 3
2	Intermediate Variables - PD/H Self-efficacy - Academic Self-efficacy	- General Self-efficacy - Competitive Sports Enjoyment - Competitive Sports Success - Competitive Sports Involvement - Age - Gender - School 1 - School 3
3	Intermediate Variable General Self-efficacy	- Competitive Sports Enjoyment - Competitive Sports Success - Competitive Sports Involvement - Age - Gender - School 1 - School 3
4	Intermediate Variables - Competitive Sports Enjoyment - Competitive Sports Success	- Competitive Sports Involvement - Age - Gender - School 1 - School 3
5	Intermediate Variable Competitive Sports Involvement	- Age - Gender - School 1 - School 3

Outcome Variables: PD/H & Academic Achievement

The regression analysis of the model revealed many significant paths. The first of these lead to the outcome achievement variables included in the model. The achievement variables are self-reported measures of student achievement in PD/H and other academic areas. PD/H Achievement measures achievement in the theoretical component of the key learning area Personal Development, Health and Physical Education. Academic Achievement is a composite variable measuring student self-reported achievement in the subject areas of English and Mathematics. The regression analysis resulted in three direct paths leading to PD/H Achievement. Of these, PD/H Self-efficacy produced the strongest link indicating that student self-efficacy beliefs specific to PD/H are strong predictors of achievement in that subject. The variable Academic Self-efficacy also had a positive path direct to PD/H Achievement, however the influence was considerably weaker than from the variable PD/H Self-efficacy. This means that students with high self-efficacy beliefs about their general academic achievement perform well in the subject PD/H; however, this relationship is not as strong as the one between PD/H achievement and PD/H self-efficacy. Competitive Sports Success also had a positive direct path to PD/H Achievement implying that students who succeed in competitive sporting endeavours also tend to achieve well in the subject PD/H.

Three direct paths are present from variables in the model leading to the Academic Achievement variable. Academic Self-efficacy produced the largest direct path indicating that high Academic Self-efficacy beliefs are strong indicators of performance in academic areas. PD/H Self-efficacy produced a negative path to Academic Achievement meaning that students who have high self-efficacy beliefs in regard to performance in PD/H actually perform lower in other academic subjects. The variable Competitive Sports Success exhibited a positive path coefficient to Academic Achievement. This shows that, similar to the relationship to PD/H Achievement, students who succeed in competitive sports also perform well in academic areas.

Intermediate Variables: Self-efficacy

The self-efficacy variables measure student's beliefs of their capabilities to perform. In the model, there were three self-efficacy variables. The most task-specific variable, PD/H Self-efficacy had three direct positive paths leading to it. The path from General Self-efficacy to PD/H self-efficacy had the largest coefficient, which indicates that subjects exhibiting high levels of General Self-efficacy also have high beliefs in their capabilities to achieve in PD/H. A positive path existed between Competitive Sports Enjoyment and PD/H Self-efficacy indicating that students who enjoy their involvement in competitive sport have elevated beliefs of PD/H self-efficacy. Students who compete successfully in sport tend to have high beliefs of PD/H Self-efficacy. This is evident from the positive relationship shown in the model from Competitive Sports Success to PD/H Self-efficacy.

The variable Academic Self-efficacy had one positive path in the model leading to it and this was from General Self-efficacy. The regression coefficient for the path was among the highest on the model showing that there is a strong relationship between student's general beliefs of self-efficacy and their academic self-efficacy beliefs.

There were three paths leading to General Self-efficacy. Competitive Sports Success, Competitive Sports Enjoyment and Gender all showed positive links. These results indicated that students who succeed in competitive sport have raised beliefs of General Self-efficacy. Their enjoyment of competitive sport also has a positive affect on General Self-efficacy, however the strength of the relationship is slightly weaker than that from Success. A positive path between Gender and General Self-efficacy indicates that females exhibit higher levels of general self-efficacy than do males.

Intermediate Variables: Competitive Sports

The competitive sports variables measured the three different aspects of Involvement, Enjoyment and Success in competitive sport. Competitive Sports Success was positively related to Competitive Sports Involvement. The regression coefficient showed a strong positive path indicating that the students reporting high levels of involvement, also experienced high levels of success in their competitive

sporting experiences. A similar beta value was observed for the path from Competitive Sports Involvement to Competitive Sports Enjoyment. The strong positive relationship suggests that students who compete frequently in sports enjoy their involvement and compete because they desire to, not because they feel they have to.

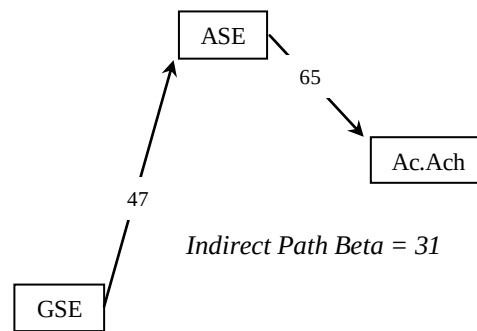
Results of the linear regression analysis identified that there were significant age and gender effects on involvement in competitive sport. The regression coefficient for age and CSI was negative (beta= -0.18⁷) indicating that as students get older, they become less involved in competitive sports activities. A significant gender effect was also present for CSI with a negative regression coefficient (beta = -0.18) indicating that males are more likely to be involved in competitive sports than females.

Indirect Pathways

As evident from table 6.1, the linear regression analyses were conducted in five stages. As well as the direct paths already discussed, there were many indirect pathways present within the model. As the full model is very complex, only paths that are significant will be discussed.

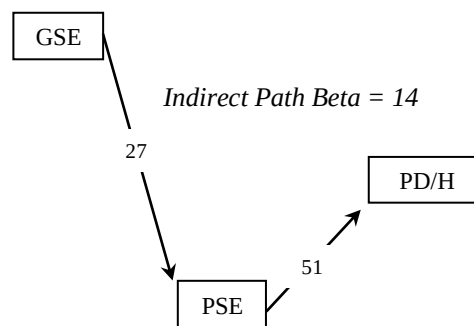
Ten significant indirect pathways exist in the model. Six of these lead to the outcome variables PD/H Achievement and Academic Achievement. The remaining four lead to the intermediate variables General, Academic and PD/H Self-efficacy. The strongest of the indirect links existing in the model is the path from General Self-efficacy to Academic Self-efficacy to Academic Achievement. This link produced a regression coefficient beta of 0.31 indicating that student beliefs of General Self-efficacy are positively related to performance in Academic areas through academic self-efficacy. The path is illustrated in Figure 6.2.

⁷ All linear regression coefficient beta values are given to 2 decimal places and are significant at $p < 0.01$



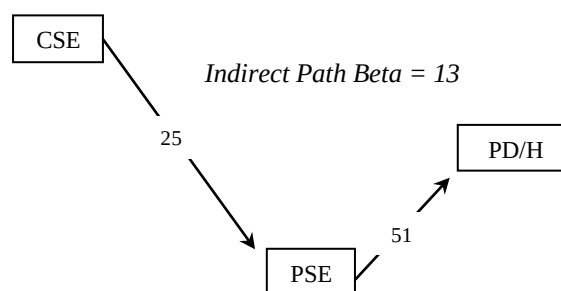
**Figure 6.2 - Indirect Path: GSE-ASE-Ac.Ach
(beta x 100)**

General Self-efficacy was indirectly linked to PD/H Achievement through PD/H Self-efficacy (Figure 6.3). This shows that students exhibiting high levels of General Self-efficacy have raised Academic Self-efficacy, which in turn positively influences their Academic Achievement. Thus students with high general self-efficacy also tend to achieve well in academic areas.



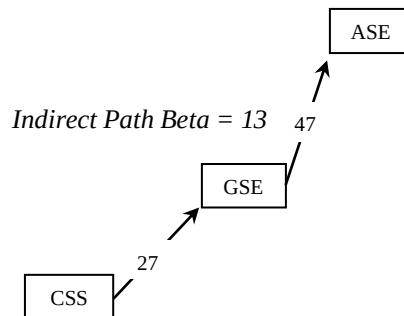
**Figure 6.3 - Indirect Path: GSE-PSE-PD/H
(beta x 100)**

Competitive Sports Enjoyment was positively linked to PD/H Self-efficacy and thus indirectly linked to PD/H Achievement. (Figure 6.4) This implies that students who enjoy their involvement in competitive sport have high levels of PD/H Self-efficacy and this has a positive impact on their achievement in PD/H.



**Figure 6.4 - Indirect Path: CSE-PSE-PD/H
(beta x 100)**

Students who are successful at competing in sport are likely to exhibit high Academic Self-efficacy through the relationship between Competitive Sport Success and General Self-efficacy. This is observed in Figure 6.5 showing the indirect pathway between Competitive Sports Success, General Self-efficacy and Academic Self-efficacy.



**Figure 6.5 - Indirect Path: CSS-GSE-ASE
(beta x 100)**

Successfully competing in sport is also likely to influence achievement in PD/H. Figure 6.6 shows the indirect path from Competitive Sports Success to PD/H Self-efficacy to PD/H Achievement.

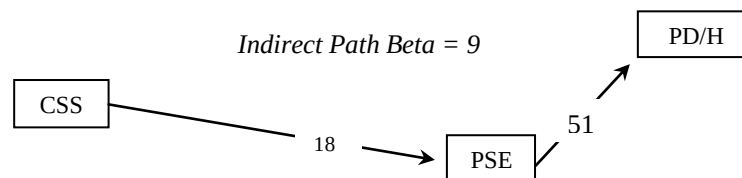
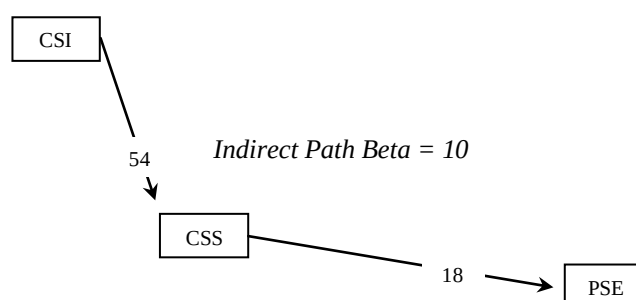


Figure 6.6 - Indirect Path: CSS-PSE-PD/H (beta x 100)

The degree to which students are involved in competitive sports has an indirect influence on their PD/H Self-efficacy through its relationship with Competitive Sport Success. Students more involved in competitive sport exhibit higher levels of self-efficacy toward the subject PD/H. This is shown in Figure 6.7 below.



**Figure 6.7 - Indirect Path: CSI-CSS-PSE
(beta x 100)**

Involvement in competitive sports also has an indirect influence on achievement in PD/H. This is observed in the relationship between Competitive Sports Involvement and Competitive Sports Success and its link to PD/H Achievement (Figure 6.8).

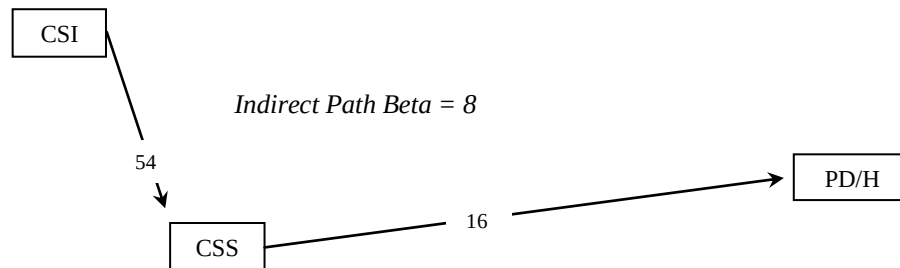


Figure 6.8 - Indirect Path: CSI-CSS-PD/H (beta x 100)

Those students more involved in competitive sport enjoy it more and this impacts upon their levels of General Self-efficacy. Figures 6.9 and 6.10 display the indirect links between Competitive Sports Involvement and General Self-efficacy. Figure 6.9 shows the pathway through Competitive Sports Enjoyment.

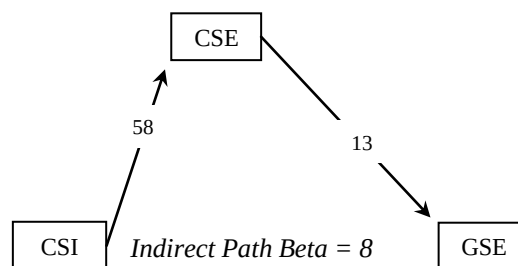
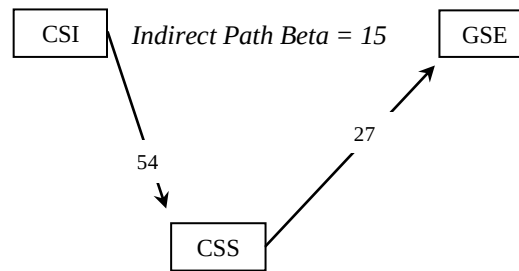


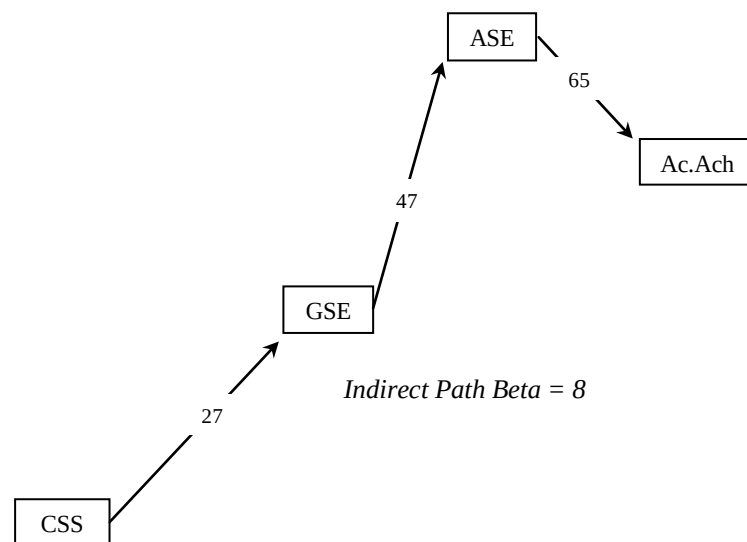
Figure 6.9 - Indirect Path: CSI-CSE-GSE (beta x 100)

The relationship between Competitive Sports Involvement and General Self-efficacy through Competitive Sports Success is slightly stronger than through Competitive Sports Enjoyment. The pathway through Competitive Sports Success is shown in Figure 6.10. Involvement in competitive sport influences an individual's belief of General Self-efficacy through both the degree to which they enjoy their involvement and their level of success. This dual pathway indicates that students who are involved in competitive sporting activities have significantly higher levels of General Self-efficacy.



**Figure 6.10 - Indirect Path: CSI-CSS-GSE
(beta x 100)**

The final indirect pathway present within the model involves three links between four variables. Competitive Sports Success is significantly linked to Academic Achievement via General and Academic Self-efficacy. The pathway is shown in Figure 6.11. It is noted here that Competitive Sports Success also has a direct link to Academic Achievement and this has been discussed previously. With a direct coefficient of 0.11, the direct relationship is slightly stronger than the indirect one shown below. The presence of two significant relationships between Competitive Sports Success and Academic Achievement lend further support to the positive impact that success in competitive sport has on achievement in academic areas.



**Figure 6.11 - Indirect Path: CSS-GSE-ASE-Ac.Ach
(beta x 100)**

Overview of Causal Relationships

Overall there was found to be a number of significant relationships in the proposed model. Academic Achievement was significantly influenced by a variety of factors.

Students exhibiting high beliefs of self-efficacy, both general and academic, are more likely to perform well in academic areas. Academic achievement, however, is most strongly influenced by high Academic Self-efficacy beliefs. Success at competing in sports is also related to academic performance. However students with high beliefs of PD/H Self-efficacy tend to perform lower in academic areas.

Student achievement in PD/H is positively influenced by their self-efficacy beliefs, Academic and PD/H, however the link is strongest from PD/H Self-efficacy beliefs. Involvement in sport of a competitive nature has a positive impact on student achievement in PD/H and students who enjoy their participation are more likely to achieve higher in the subject than students who do not. Success is an influential factor in student achievement for the subject of PD/H with successful students achieving higher and exhibiting higher self-efficacy.

General Self-efficacy has a significant influence on more specific levels of self-efficacy. Competitive sport dimensions have positive affect on self-efficacy beliefs. Students involved in competitive sport exhibit stronger beliefs of self-efficacy and those who enjoy and are successful in their involvement are more likely to have stronger self-efficacy beliefs.

Summary

Various factors influence achievement at school. This study proposed a model identifying relationships between aspects of competitive sport, self-efficacy and achievement in academic subjects and PD/H.

Student involvement in competitive sport was found to have an indirect influence on their academic achievement. In particular, competitive sport involvement, enjoyment and success had significant impacts on achievement in PD/H. Students who enjoy competing perform well in the subject, as do students who are successful in their competitive sport endeavours. Achievement in other academic areas was also influenced by success in competitive sport, but was not related to involvement in, or enjoyment of competitive sport.

Self-efficacy measures are strongly related to achievement in both academic areas and PD/H. General self-efficacy beliefs influence achievement through their relationship to more specific levels of self-efficacy, which in turn strongly influence achievement. Beliefs of self-efficacy are also impacted on by aspects of competitive sport. In particular, students who enjoy competing and are successful, exhibit high levels of general self-efficacy.

There are differences between genders on the level of involvement in competitive sport and levels of general self-efficacy. Males tend to be more involved in competitive sport however females tend to exhibit higher levels of general self-efficacy. Older students also tend to not be as heavily involved in competitive sport.

This chapter has examined proposed causal relationships between variables of interest and has established a casual model displaying the pathways evident. The following chapter will address the research questions and provide a further discussion on the findings of the study, consider possible implications from a Christian world-view, identify limiting factors of the study and make recommendations for further study.

Chapter 7

Discussion & Conclusion

Introduction

This study has investigated the impacts of competitive sport and self-efficacy on student achievement in academic areas. Previous chapters have established the theoretical basis and methodological processes involved in the study. Descriptive and regression analyses have been used to test the proposed causal model. This chapter presents a summary and conclusion of this thesis by providing an overview of the findings and answering the research questions. Limitations of the study are considered and recommendations for further study are presented.

Response to Research Questions

Having tested the relationships within the model (Chapter 6), and considering the results in light of the literature, this chapter will now address the research questions proposed in Chapter 3.

1. Does involvement in competitive sports influence a person's academic achievement?

Competitive sport involvement did not display a direct relationship with either of the achievement scales in this study. However, an indirect link was present between involvement in competitive sports and achievement in PD/H through Competitive Sport Success. Students that are more involved in competitive sport report more success in competitive sport and report higher levels of achievement in the subject PD/H. Students who experience successful involvement in their competitive sporting endeavours also report higher levels of achievement in other academic areas. The causal model also identified that students who enjoy their involvement in competitive sport have higher PD/H Self-efficacy and this in turn leads to them performing well in the subject PD/H.

2. Is there a relationship between competitive sports involvement and self-efficacy?

Involvement in competitive sports has positive affects on self-efficacy at both the general and task-specific level. Competitive sport involvement showed an indirect positive relationship with general self-efficacy through its positive influence on both student enjoyment of, and level of success in, competitive sports. In a similar way, an indirect positive path also exists in the model between the variables competitive sport involvement and PD/H self-efficacy. This indicates that students who are highly involved in sports of a competitive nature tend to exhibit high levels of PD/H self-efficacy.

3. Is there a relationship between enjoyment and success in competitive sport and self-efficacy?

Results from the regression analyses show that both enjoyment and success in competitive sport have positive relationships with student self-efficacy at general, academic and task-specific levels. Enjoyment in competitive sport had a positive direct relationship to both general and PD/H self-efficacy. Competitive success also produced a direct positive link to general and PD/H self-efficacy. An indirect path was present between success in competitive sport and academic self-efficacy. Thus there is a positive relationship between both enjoyment and success in competitive sports and self-efficacy.

4. To what extent does self-efficacy influence academic achievement?

Results from this study are supportive of the notion that self-efficacy beliefs strongly influence performance in academic areas. The path between Academic Self-efficacy and Academic Achievement was the strongest path present within the model. Academic Self-efficacy was also positively linked to achievement in PD/H although the link was considerably weaker than to Academic Achievement. A strong link was also present between PD/H self-efficacy and PD/H achievement. Students exhibiting high beliefs of self-efficacy toward the subject PD/H tend to achieve well, however, their PD/H efficacy beliefs tend to be negatively related to their achievement in

other academic areas. General self-efficacy displayed a positive indirect influence on both academic and PD/H achievement indicating that students who have high beliefs about their general capabilities tend to achieve well in the subject PD/H as well as other academic areas.

5. Does general self-efficacy influence more task-specific self-efficacy?

Results of the causal analysis indicate that general self-efficacy was positively linked to both academic and PD/H self-efficacy. Thus, this study supports the notion put forward by Shelton (1990) that general self-efficacy beliefs inform task-specific self-efficacy beliefs.

6. To what extent to background factors influence involvement and attitudes to competitive sport, self-efficacy and academic achievement?

The background factors used in the causal model for this study were age and gender. Results of the regression analysis showed that young males are more highly likely to be involved in competitive sport. A gender effect was present on competitive sports involvement with males reporting higher levels of involvement. Gender was also significantly related to general beliefs of self-efficacy with females demonstrating higher beliefs of self-efficacy. Age had an inverse relationship with competitive involvement indicating that as students get older, they are less likely to participate in competitive sport.

Overview of Findings

The present study examined the influences of competitive sport involvement, enjoyment and success on self-efficacy and academic achievement. It developed a theoretically based causal model identifying relationships between relevant background, intermediate and outcome variables. An overview of the findings will now be presented before proceeding to consider the limitations of the study and recommendations for future research.

The causal model developed in this study found that Gender was a significant factor in student involvement in competitive sport and levels of general self-efficacy. Males are more likely to participate in competitive sport than females. This supports similar findings by Gill (1988) who found that males consistently scored higher on levels of competitiveness including involvement in competitive sport. Females in this study exhibited higher levels of general self-efficacy. This was interesting because of the relationship significant positive relationship between Competitive Sport Involvement and General Self-efficacy. Males tended to be more involved in competitive sport and involvement lead to higher levels of General Self-efficacy thus it was expected that males would exhibit higher General Self-efficacy.

Competitive Sport Involvement was also significantly influenced by Age. Older students tend to compete less. Makin (1999) suggests that this may be due to increased commitments to study and higher social demands of older students.

The present study found that most students who were involved in competitive sport enjoyed their involvement and were successful. It would be beneficial to repeat this study in other settings, such as in selective or public schools, to compare levels of enjoyment and success in competitive sports. It is interesting to note that the enjoyment and success in competitive sport variables displayed strong a strong correlation ($r = 0.59$; $p < 0.01$) indicating that as the level of one went up, so did the level of the other. This study did not establish the direction of the relationship, however it is most probably recursive. Further analysis in this area could address this issue in more depth.

The present study also found that General Self-efficacy had significant influences over more task-specific self-efficacy. This finding is in line with the diagram developed by Shelton (1990) showing that General Self-efficacy serves to inform specific levels of self-efficacy, which then influences performance in specific tasks. The more specific levels of self-efficacy were found to have significantly higher influence on the corresponding tasks, which supports the notion that the influence of self-efficacy on performance is strongest when beliefs being measured are specific to the task for which performance is being measured (Bandura, 1977). However self-

efficacy beliefs can generalise across domains (ibid), which is also supported in the findings presented in this study.

It is interesting to note that the three aspects of competitive sport, involvement, enjoyment and success had significant positive impacts on achievement in the subject of PD/H.

Limitations of the Study

It is not possible to investigate all possible influences on student academic achievement in a study of this scale. It is expected that factors will exist limiting the study. It is important to recognise such limitations for purposes of putting the findings into perspective as well as identifying areas of consideration for further research.

The scales measuring achievement in academic areas used student self-reported measures. Although self-reporting has been found to be a relatively accurate and reliable measure of performance in academic areas (Wilson & Wright, 1993; NSSE, 2002) it is subject to the halo effect whereby students might inflate certain aspects of their performance (NSSE, 2002). Where such an affect exists however, the degree to which students give inflated responses appears to be constant for different types of students and situations (Pike, 1999 in NSSE, 2002). This being the case, it can still be considered as a limitation.

The population sample for this study returned 619 useful sets of data. This is a somewhat small sample. As the Adventist education system operates nationally, the inclusion of only three schools each from the Australian east coast must also be considered as a limitation of the study.

Students in the senior years, 11 and 12, were disproportionately represented within the sample. The subject PD/H is an optional subject in preliminary and HSC years and only a small number of senior students completed the questionnaire.

Having identified the limitations, it is noted here that the interpretation of the findings contained in this thesis needs to be done within the context of the limiting factors discussed. This will help prevent possible misrepresentation of the findings.

Recommendations for Further Research

Education is a complex process and there are many factors that may influence an individual's achievement in academic areas. This study has addressed issues pertaining to competitive sport and self-efficacy in relation to academic achievement. The relationships identified were often complex, however, adequate evidence was established upon which to draw conclusions about the relationships studied. This study has not attempted to be a final authority on the aspects studied. It is hoped that future studies will be conducted in this domain that will build on and strengthen the outcomes of the study. With this in mind, this section will provide some suggestions for areas of further research.

Firstly, the outcomes of this study have focused on levels of academic achievement in the areas of PD/H, English and Mathematics. Further studies into the affects on other academic areas would prove beneficial in establishing the scope of influence of competitive sport.

While an important aspect of education, academic achievement is but one of many outcomes. Likewise, the scope of such research need not be limited to academic domains. It is suggested that further studies focus on other areas such as motivational aspects and personal values relating to the importance of health and well-being.

Excluding items relating to background factors, the instrument used in this study contained 96 items. Although allowing for the development of strong and reliable constructs in the present study, such a lengthy questionnaire might prove inconvenient for use in future research. In light of this, it is suggested that a shortened version of the instrument be developed and tested for use in similar studies.

This study examined self-efficacy as an intermediate variable in the causal relationships. Although self-efficacy is a construct shown to have significant influence on many aspects of life, future research might be beneficial in examining other self-constructs such as self-concept or attribution theory.

The sample used in this study consisted of students from Seventh-day Adventist schools. It is recommended that similar studies be conducted in other education systems such as public, selective or sporting schools. Such studies could then form a basis for comparison and possibly identify whether the relationships in the model are different in other school systems.

The above recommendations may have significant contributions to the body of knowledge surrounding the impacts of competitive sport.

Implications for Christian Physical Educators

Level of involvement in competitive sports was measured by the Competitive Sports Involvement scale developed in this study. Results from the scale indicate that students attending Adventist high schools participate on a slightly more than occasional basis in sports of a competitive nature. Involvement in competitive sport was found to be significantly related to achievement in the subject PD/H. Enjoyment of, and success in competitive sport also had significant impacts in this area.

Although studies of this specific nature have not been conducted previously, the results found here suggest that perhaps educators in the field of physical education could incorporate enjoyable competitive opportunities for their students in the practical aspect of the subject, allowing for successful experiences by most students. Results from this study suggest that doing this may lead to higher levels of achievement in the theoretical component of the subject.

As discussed in the opening chapter, historically there has been a negative association with competitive sports in Seventh-day Adventist education. It is hoped that the results of this study may clarify the role of competitive sport in school thus encouraging further research into specific aspects of competitive sport. It is

acknowledged that a major motivation for Christian educators is to foster the development of mature faith in their students (Heise, 2001). The concerns held by Ellen White regarding competition are most certainly valid, if a person's focus becomes centred solely on winning and comparing themselves to others, however, if competition serves merely as a motivating factor to do one's best, it may become a positive factor in the growth of a person's personal relationship with Christ.

Conclusion

This study has shown that competitive sport has the potential to benefit students in both their beliefs of self-efficacy and their academic achievement. As academic achievement is an important and valued aspect of education the findings of this research help clarify the role of competitive sport and its influences on student's educational experience. It is the conclusion of this research that competition plays an important role in the holistic development of students and that Christian educators seek to further understand this role.

References

- Adelaide Declaration, (1999). *The Adelaide Declaration on National Goals for Schooling in the Twenty-first Century*. Retrieved from website: <http://www.dest.gov.au/schools/adelaide/adelaide.htm> accessed on 26.09.03.
- Allison, K.R., Dwyer, J.J.M., & Makin, S. (1999). Self-efficacy and participation in vigorous physical activity by high school athletes. *Health Education and Behaviour*. 26(1), 12-24.
- Anonymous, (2003). Physical activity/exercise and diabetes mellitus. *Diabetes Care*. 26, 73-77.
- Australian Bureau of Statistics, (2002). *Mixed Results in Health Report*. Cat No. 4364.0. Australian Bureau of Statistics, Canberra.
- Australia Sports Commission, (2003). *Active Facts*. Retrieved from website: <http://www.activeaustralia.org/facts/> accessed on 2.07.03.
- Advances in Behaviour Research and Therapy*. (1978) Special issue on perceived self-efficacy. 1, 137-269.
- Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioural change. *Psychological Bulletin*, 84, 191-215.
- Bandura, A. (1984). Recycling misconceptions of perceived self-efficacy. *Cognitive Therapy and Research*. 8(3), 231-255.
- Bandura, A. (1986). *Social Foundations of Thought and Action: A Social Cognitive Theory*. Englewood Cliffs, NJ: Prentice-Hall.
- Bandura, A. (1994). Self-efficacy. In Ramachaudran, V.S. (ED.), *Encyclopaedia of Human Behaviour*. Vol. 4, pp 71-81. New York: Academic Press.
- Bandura, A. (2002a). *Self-efficacy slides*. Retrieved from website: <http://www.emory.edu/EDUCATION/mfp/efficacy4.html> accessed on 28.05.02.
- Bandura, A. (2002b). *Self-efficacy slides*. Retrieved from website: <http://www.emory.edu/EDUCATION/mfp/efficacy5.html> accessed on 28.05.02.
- Bandura, A. (2003). Distinction between self-efficacy and confidence. Retrieved from website: <http://www.emory.edu/EDUCATION/mfp/banconfidence.html> accessed on 22.09.03

- Beamish, P.J. (1998). *Databases and Student Learning: A Multilevel Analysis of the Use of Databases in the Classroom*. Unpublished doctoral dissertation: Newcastle University, Newcastle.
- Benson, K.F. (2000). Constructing academic inadequacy: African American athletes' stories of schooling. *The Journal of Higher Education*. 71(2), 223-246.
- Bessant, J. & Watts, R. (2002). *Sociology Australia 2nd edition*. Crows Nest, Australia: Allen & Unwin
- Bosscher, R.J. & Smitt, J.H. (1998). Confirmatory factor analysis of the general self-efficacy scale. *Behaviour Research and Therapy*. 36, 339-343.
- Bourke, S.F. (1984). *The Teaching and Learning of Mathematics*. (ACER Research Monograph No.25). Hawthorne, Victoria: Australian Council for Educational Research.
- Brutsaert, H. & Van Houtte, M. (2002). Girls' and boys' sense of belonging in single-sex versus co-educational schools. *Research in Education*. 68, 48-56.
- Buckingham, J., Sullivan, L., & Hughes, H. (2001). *State of the Nation 2001: A century of Change*. St Leonards, NSW: The Centre for Independent Studies Limited.
- Cai, S. (2000). Physical exercise and mental health: A content integrated approach in coping with college students' anxiety and depression. *Physical Educator*. 57(2), 69-77.
- Chase, M.A. (2001). Children's self-efficacy, motivational intentions and attributions in physical education and sport. *Research Quarterly for Exercise and Sport*. 72(1) 47-54.
- Clinton, B. (1998). Speech given at the second annual education international world congress. From: Ross, W, S. *Clinton Stresses Importance of Education to Building Democracy*. Retrieved from website: <http://usembassy-australia.state.gov/hyper/WF980729/efp309.htm> accessed on 25.09.03
- Coakley, J.J. (1998). *Sport in Society: Issues and Controversies 6th edition*. Boston: McGraw-Hill.
- Considine, G. & Zappala, G. (2002). Factors influencing the educational performance of students from disadvantaged backgrounds. In Earley, T. & Bradbury, B. (Eds) *Competing Visions: Refereed Proceedings of the National Social Policy Conference 2001*. SPRC Report ½, Social Policy Research Centre, University of New South Wales, Sydney, 91-107.
- Earl, L. & Fopp, R. (1999). *Introduction to Australian Society: A sociological overview*. Sydney: Harcourt Brace.

- Eastman, C., & Marzillier, J. S. (1984). Theoretical and methodological difficulties in Bandura's self-efficacy theory. *Cognitive Therapy and Research*, 8, 213-230.
- Field, T., Diego, M. & Sanders, C.E. (2001). Exercise is positively related to adolescents' relationships and academics. *Adolescence*. 36(141), 105-110.
- Fontaine, K.R. (2000). Physical activity improves mental health. *The Physician and Sportsmedicine*. 28(10), 83-
- Funnell, M. M. (2003). Preventing Type 2 diabetes with weight loss and exercise. *Nursing Management*. Jun 2003, 10.
- Friedenreich, C.M., & Orenstein, M.R. (2002). Physical activity and cancer prevention: Etiologic evidence and biological mechanisms. *The Journal of Nutrition*. 132(11).
- Gill, D.L. (1988). Gender differences in competitive orientation and sport participation. *International Journal of Sports Psychology*. 19, 145-159.
- Gould, D., Feltz, D., & Weiss, M. (1985). Motives for participating in competitive youth swimming. *International Journal of Sports Psychology*. 16, 126-140.
- Graybill, R. (1974). *Ellen G White and Competitive Sports*. Washington D.C: Ellen G White Estate.
- Heise, L.C. (2001). *High School Worship Assembly and Student Faith Maturity*. Unpublished Honours Dissertation: Avondale College, Cooranbong.
- Henkel, S.A. (1997) Monitoring competition for success. *JOPERD*. 68(2), 21-28.
- Hobart Declaration, (1989). *The Hobart Declaration on Schooling: Common and Agreed National Goals for Schooling in Australia*. Retrieved from website: <http://www.curriculum.edu.au/mceetya/hobdec.htm> accessed on 7.10.03.
- Jordan, W.J. (1999). Black high school students' participation in school-sponsored sports activities: Effects on school engagement and achievement. *The Journal of Negro Education*. 68(1), 54-71.
- Keeves, J.P. (1988). Models and model building. In J.P. Keeves (1988). *Educational Research, Methodology and Measurement: An International Handbook*. (pgs. 559-566). Oxford: Pergamon Press.
- Koivula, N. (1999). Sport participation: Differences in motivation and actual participation due to gender typing. *Journal of Sport Behaviour*. 22(3), 360-380.

- Lent, R.W., Brown, S.D., & Larkin, K.C. (1984). Relation of self-efficacy expectations to academic achievement and persistence. *Journal of Counselling Psychology*. 31, 356-362.
- Lent, R.W., Brown, S.D., & Larkin, K.C. (1986). Self-efficacy in the prediction of academic performance and perceived career options. *Journal of Counselling Psychology*. 33(3), 265-269.
- Li, A.M., Chan, D., Wong, E, Yin, J., Nelson, E.A.S., & Fok, T.F. (2003). The effects of obesity on pulmonary function. *Archives of Disease in Childhood*. 88(4), 361-363.
- Maloney, M.T., & McCormick, R.E. (1993). An examination of the role that intercollegiate athletic participation plays in academic achievement. *The Journal of Human Resources* 28(3), 555-570.
- Marzillier, J. & Eastmann, C. (1984). Continuing problems with self-efficacy theory: A reply to Bandura. *Cognitive Therapy and Research*, 8, 257-262.
- Morris, L., Sallybanks, J., Willis, K., & Makkai, T. (2003). Sport, physical activity and antisocial behaviour in youth. *Australian Institute of Criminology: Trends and Issues in Crime and Criminal Justice*. April 2003. Retrieved from website, <http://www.aic.gov.au/publications/tandi/ti249.pdf> accessed on 30.09.03.
- Multon, K.D., Brown, S.D., & Lent, R.W. (1991) Relation of self-efficacy beliefs to academic outcomes: a meta-analytic review. *Journal of Counselling Psychology*. 38(1), 30-38.
- New International Version, (1989). *The NIV Serendipity Bible for Study Groups Revised Edition*. Michigan: Zondervan Bible Publishers.
- Newcombe, P.A. & Boyle, G.J. (1995). High school student' sports personalities: variations across participation level, gender, type of sport, and success. *International Journal of Sport Psychology*. 26, 277-294.
- Novak, M. (1973). *The Joy of Sport*. New York: Basic Books, Inc.
- Norusis, M.J. (1993). *SPSS for Windows. Base System Users Guide (Release 6.0)*. Chicago: SPSS Inc.
- NSSE, 2002. Validity, reliability and credibility of self-reported data. Retrieved from website: http://www.indiana.edu/~nsse/html/2002_NSSE_report/html/conceptual_validity.htm accessed on 10.08.03.
- Osness, W.H., & Mulligan, L. (1998). Physical activity and depression among older adults. *Journal of Physical Education, Recreation and Dance*. 69(9), 16-19.

- Pajares, F. & Schunk, D. H. (unpublished). Chapter to be included in Aronson, J. & Cordova, D. (Eds), *Psychology of Education: Personal and Interpersonal Forces*. New York: Academic Press.
- Pajares, F. (1996). Self-efficacy beliefs in academic settings. *Review of educational research*. 66(4), 543-578.
- Pajares, F. (2002a). Current directions in self-efficacy research. In: Maehr, M., & Pintrich, P.R. (Eds). *Advances in Motivation and Achievement*. Volume 10, (pp.1-49). Greenwich, CT: JAI Press. Retrieved from website, <http://www.emory.edu/EDUCATION/mfp/effchapter.html> accessed 26.3.02
- Pajares, F. (2002b). *Self-efficacy beliefs in academic contexts: An outline*. From website: <http://www.emory.edu/EDUCATION/mfp/efftalk.html> accessed on 20.03.03
- Pascarella, E.T., Bohr, L., Nora, A., & Terenzini, P.T. (1996). Intercollegiate athletic participation and freshman-year cognitive outcomes. *The Journal of Higher Education*. 66(4), 369-387.
- Peltier, G.L., Laden, R. & Matranga, M. (1999). Do high school athletes succeed in college: A review of research. *The High School Journal*. 82(4). 234-238.
- Pescatello, L.S. (2001). Exercising for health: The merits of lifestyle physical activity. *Western Journal of Medicine*. 174(2), 114-118.
- Schumaker, J.F., Small, L. & Wood, J. (1986). Self-concept, academic achievement and athletic participation. *Perceptual and Motor Skills*. 62, 287-390.
- Shelton, S.H. (1990). Developing the construct of general self-efficacy. *Psychological Reports*. 66, 987-994.
- Sherer, M., Maddux, J.E., Mercandante, B., Prentice-Dunn, S., Jacobs, B., & Rogers, R.W. (1982). The self-efficacy scale: construction and validation, *Psychological Reports*. 51, 663-671.
- Sherer, M. (1990). General self-efficacy: More development needed. *Psychological Reports*. 66, 1242.
- Sherwood, L. (1997). *Human Physiology: From cells to systems 3rd ed*. Belmont: Wadsworth.
- Shunk, D.H. (1991). Self-efficacy and academic motivation. *Educational Psychologist*. 26(3&4), 207-231.
- Slama M, Susic D, & Frohlich E.D. (2002). Prevention of hypertension. *Current Opinions in Cardiology* 17(5), 531-6.

- Stake, R.E. (1995). *The Art of Case Study Research*. Thousand Oaks: Sage Publications.
- Steptoe, A., & Butler, N. (1996). Sports participation and emotional wellbeing in adolescents. *The Lancet*. June 29, 1996.
- Thompson P.D. (ed) (2000). *Exercise and Sports Cardiology*. New York City: McGraw-Hill Medical Publishing.
- Warash, B.G., Fitch, C. & Bodnovich, K. (2003). Snack choices: Helping young people make decisions. *Journal of Family and Consumer Sciences*. 95(2), 60-64
- Wardlaw, G. M. (1999) *Perspectives In Nutrition 4th Ed*. Boston, Burr Ridge IL: WBC/McGraw-Hill.
- Washington, R.L., Bernhart, D.T., Gomez, J., Johnson, M.D., Martin, T.J. & Rowland, T.W. (2001). Organised sports for children and preadolescents. *Pediatrics*. 107 (6), 1459-1462.
- Watt, S.E., & Martin, P.R. (1994). Effect of general self-efficacy expectancies on performance attributions. *Psychological Reports*. 75, 951-961.
- Weinberg, R., Gould, D. & Jackson, A. (1979). Expectations and performance: An empirical test of Bandura's self-efficacy theory. *Journal of Sport Psychology*. 1, 320-331.
- White, E.G. (1952). *Education*. Mountain View, California: Pacific Press Publishing Association.
- WHO, (1986). *Ottawa Charter for Health Promotion*. First International Conference on Health Promotion, World Health Organisation, Ottawa, 21 November 1986.
- Wilkes, G.A., & Krebs, W.A. (1998). *Collins English Dictionary (Fourth Australian Edition)*. Glasgow: Harper Collins Publishers.
- Wilson, J. & Wright, C.R. (1993). The predictive validity of student self-evaluations, teachers' assessments, and grades for performance on the verbal reasoning and numerical ability scales of the differential aptitude test for a sample of secondary school students attending rural Appalachia schools. *Educational and Psychological Measurement*. 53, 259-270.
- Wood, R.E., & Locke, E.A. (1987). The relation of self-efficacy and grade goals to academic performance. *Educational and Psychological Measurement*. 47, 1013-1024.
- Woodruff, S., & Cashman, J. (1993). Task, domain, and general efficacy: An examination of the self-efficacy scale. *Psychological Reports*. 72, 423-432.

World Health Organisation, (1986). First international conference on health promotion. *Ottawa Charter for Health Promotion*. Ottawa, Nov 1986. Retrieved from website, www.who.int/hpr/archive/docs/ottawa.html accessed 19.9.03.

Appendix A

Data Collection

	<i>Page</i>
A.1 <i>Guidelines for Administering Questionnaires</i>	77
A.2 <i>Introductory Script</i>	79
A.3 <i>Questionnaire Cover Letter</i>	81
A.4 <i>The Questionnaire</i>	83

Appendix A.1

Guidelines for Administering Questionnaires

Included on front of envelopes containing questionnaires for distribution

COMPETITIVE SPORT, SELF-EFFICACY AND ACADEMIC PERFORMANCE

ADMINISTERING OF QUESTIONNAIRES

THANKYOU SO MUCH FOR GIVING UP SOME OF YOUR CLASS TIME DURING THIS BUSY TIME OF YEAR TO ASSIST WITH THIS RESEARCH. IT IS GREATLY APPRECIATED.

- THERE ARE TWO (2) OVERHEAD TRANSPARENCIES INCLUDED WITH THESE QUESTIONNAIRES. OHT 1 EXPLAINS HOW THIS RESEARCH BENEFITS THE STUDENTS AND OHT 2 IS THE FRONT PAGE OF THE QUESTIONNAIRE
- PUT OHT 1 UP AND READ IT TO THE CLASS
- PUT OHT 2 UP AND READ THROUGH IT WITH THE CLASS
- EMPHASISE THE POINT THAT ALL INFORMATION IS ANONYMOUS AND THAT THE ANSWERS GIVEN WILL NOT BE SEEN BY THEIR TEACHERS AND CAN'T AFFECT THEIR GRADES
- MAKE SURE THAT STUDENTS DO NOT WRITE THEIR NAMES ANYWHERE ON THE QUESTIONNAIRE
- PLACE THE COMPLETED QUESTIONNAIRES INTO THE ENVELOPE PROVIDED IMMEDIATELY AND SEAL IT
- I WILL BE BACK TO COLLECT THE COMPLETED QUESTIONNAIRES BY 3 PM ON FRIDAY

FINAL NOTE:

The information gathered on this questionnaire is a vital part of this research. Please make sure students give meaningful answers. If a student appears not to be putting much thought into their answers, please encourage them to think about it more.

Appendix A.2

Introductory Script

Delivered to subjects prior to commencement of questionnaire.

AVONDALE COLLEGE's education faculty is doing some RESEARCH AIMED AT FINDING OUT HOW MUCH A PERSONS CONFIDENCE in their ability to do certain things AFFECTS their results at school. The research is particularly interested in finding out how much your level of involvement in competitive sport affects your confidence and how this influences the results you get at school.

YOU WILL BE ASKED TO COMPLETE A QUESTIONNAIRE THAT ASKS YOU ABOUT YOUR COMPETITIVE SPORTS INVOLVEMENT, SOME QUESTIONS ABOUT YOUR CONFIDENCE IN A VARIETY OF THINGS AND YOUR RESULTS IN ENGLISH, MATHS AND PD/H/PE.

YOUR ANSWERS ARE IMPORTANT AND WILL HELP PE TEACHERS AS THEY WILL BE ABLE TO MAKE CLASSES MORE FUN AND HELP YOU GET THE BEST RESULTS YOU CAN IN CLASS.

Appendix A.3

Questionnaire Cover Letter

Competitive Sport, Self-efficacy and Academic Performance

Self-efficacy theory, describes the confidence a person has in their ability to do the things that they try to do. Self-efficacy influences our choice of activities, the effort we put into that activity and our persistence with the activity when faced with difficulties. This research is interested in establishing how participation in competitive sport affects our self-efficacy, which in turn, can influence our academic achievement.

This questionnaire asks you to describe your involvement in competitive sport, your self-efficacy and your academic performance. Your cooperation will greatly assist in this research project. Please be honest in your responses to make the information you provide useful to the researcher.

DO NOT WRITE YOUR NAME ANYWHERE ON THIS FORM!

Your responses are anonymous and all data collected will be treated with strict confidentiality.

Please note: Completion and submission of this questionnaire indicates your informed consent to participate in this study.

On the next five pages you'll find a series of statements. For each statement, circle the option you think most applies to you.

For example:

	Disagree		Neutral		Agree
Q1. I am certain that I can accomplish my goals	A	B	C	D	E

If you think that you can always accomplish goals that you set yourself, circle letter E on your sheet. If you think you never accomplish your goals, circle A. You can also choose letters B, C, or D, which are in between.

If you want to change your answer after you've circled an option please place a cross through it and circle your final choice.

For example:

	Disagree		Neutral		Agree
Q1. I am certain that I can accomplish my goals	A	B	C	D	E

Once you are finished please place the completed questionnaire into the envelope it came in and seal it up. The envelope will not be opened at school but will be returned to Avondale College for further analysis.

THANK YOU FOR YOUR ASSISTANCE

Appendix A.4

The Questionnaire

Competitive Sport, Self-efficacy and Academic Achievement

The information given in this section is gathered for the purpose of statistical analysis only and will not in any way be used to identify you.

Age: _____ Gender: M / F Year: 7 8 9 10 11 12

Religion: _____

PLEASE BEGIN

SECTION I – Competitive Sports Participation

Competitive Sport

Sport in which the success of one individual or team reduces the success of other individuals or teams. There is only one winner and there may be more than one loser.

What is the main type of competitive sport that you play? (Please tick ✓) ☐ Team ☐ Individual

POSSIBLE RESPONSES				
<i>Never</i> A	<i>Rarely</i> B	<i>Occasionally</i> C	<i>Frequently</i> D	<i>Very Frequently</i> E

		Never	Occasionally	Very Frequently		
Q1.	How much do you play competitive sport at school?	A	B	C	D	E
Q2.	How often do you play competitive sport during PE classes?	A	B	C	D	E
Q3.	How often do you play competitive sport at school outside of PE classes?	A	B	C	D	E
Q4.	How often do you play competitive sport outside of school?	A	B	C	D	E
Q5.	How often do you play competitive sport on the weekends?	A	B	C	D	E

SECTION I CONTINUES OVER THE PAGE

SECTION II – Self-efficacy

POSSIBLE RESPONSES									
Totally Disagree		Somewhat Disagree		Neutral		Somewhat Agree		Totally Agree	
A		B		C		D		E	
				</					

		Disagree		Neutral		Agree
Q26.	Sometimes I think an assignment is easy when the other kids in class think it is hard	A	B	C	D	E
Q27.	I go to a good school	A	B	C	D	E
Q28.	Adults who have good jobs probably were good students when they were kids	A	B	C	D	E
Q29.	I can learn PD/H content well	A	B	C	D	E
Q30.	I am one of the best students in my class	A	B	C	D	E
Q31.	No one cares if I do well in school	A	B	C	D	E
Q32.	It is not hard for me to get good grades in PD/H	A	B	C	D	E
Q33.	It is important to go to high school	A	B	C	D	E
Q34.	I usually do not get good grades in PD/H because it is too hard	A	B	C	D	E
Q35.	My classmates usually get better grades than I do	A	B	C	D	E
Q36.	What I learn in school is not important	A	B	C	D	E
Q37.	I am a good PD/H student	A	B	C	D	E
Q38.	I usually do not get good grades in maths because it is too hard	A	B	C	D	E
Q39.	It does not matter if I do well in school	A	B	C	D	E
Q40.	Kids who get better grades than I do get more help from the teacher than I do	A	B	C	D	E
Q41.	I am a good reading student	A	B	C	D	E
Q42.	Teachers like kids even if they do not always make good grades	A	B	C	D	E
Q43.	I work hard in PD/H classes	A	B	C	D	E
Q44.	I will quit school as soon as I can	A	B	C	D	E
Q45.	It is not hard for me to get good grades in school	A	B	C	D	E
Q46.	When the teacher asks a question I usually know the answer even if the other kids don't	A	B	C	D	E
Q47.	I am smart	A	B	C	D	E
Q48.	I could get the best grades in PD/H if I tried hard enough	A	B	C	D	E
Q49.	I usually understand my homework assignments	A	B	C	D	E
Q50.	I am one of the best students in my PD/H class	A	B	C	D	E
Q51.	I am a good maths student	A	B	C	D	E
Q52.	My teacher thinks I am smart	A	B	C	D	E
Q53.	When I am old enough I will go to university	A	B	C	D	E

PLEASE CONTINUE ON TO SECTION III ☺

SECTION III – Academic Achievement

Please answer the following questions in relation to each of the subjects indicated.

Please Circle the answer which most applies to you

Personal Development/Health (PD/H)

Q1.	Compared to the rest of the class, I rate myself as	Below average	Average		Above average	
Q2.	From my last report, My grade for this class was	<40	50	60	70	80 >90
Q3.	I Normally do well in PD/H	Agree	Somewhat Agree	Neutral	Somewhat Disagree	Disagree
Q4.	My position in this class was	Top 10	10-20	20-30	30+	

English

Q5.	Compared to the rest of the class, I rate myself as	Below average	Average		Above average	
Q6.	From my last report, My grade for this class was	<40	50	60	70	80 >90
Q7.	I Normally do well in English	Agree	Somewhat Agree	Neutral	Somewhat Disagree	Disagree
Q8.	My position in this class was	Top 10	10-20	20-30	30+	

Mathematics

Q9.	Compared to the rest of the class, I rate myself as	Below average	Average		Above average	
Q10.	From my last report, My grade for this class was	<40	50	60	70	80 >90
Q11.	I Normally do well in Maths	Agree	Somewhat Agree	Neutral	Somewhat Disagree	Disagree
Q12.	My position in this class was	Top 10	10-20	20-30	30+	

END OF QUESTIONNAIRE

**Thank you, please place your questionnaire in the envelope,
seal it and return it to the supervisor. ☺**

Appendix B

Pilot Data

	<i>Page</i>
B.1 <i>Gender & Age Distribution of Pilot Sample</i>	90
B.2 <i>Competitive Sports Constructs</i>	91
B.3 <i>Self-efficacy Constructs</i>	93
B.4 <i>Achievement Constructs</i>	95

Appendix B.1

Gender & Age Distribution of Pilot Sample

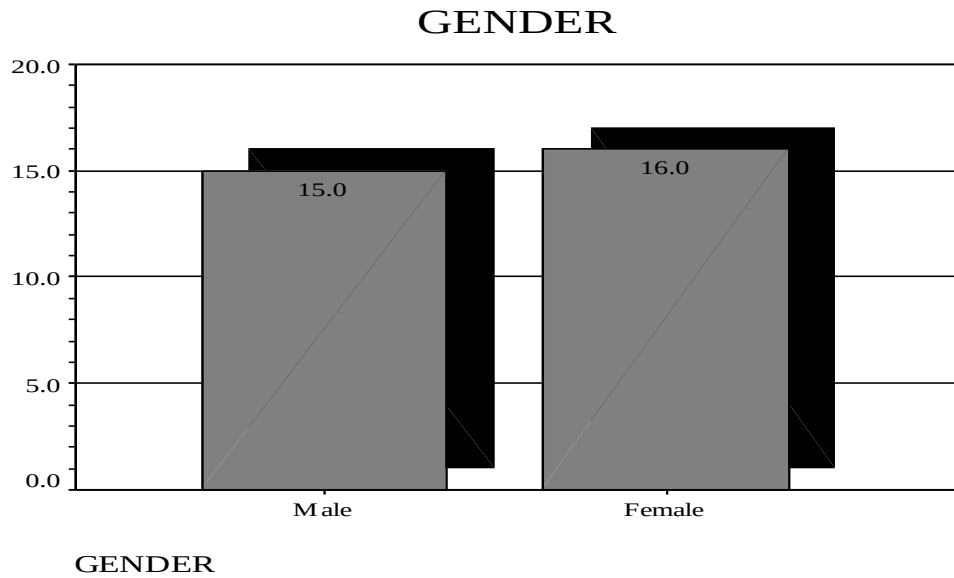


Figure B.1.1 - Pilot Distribution by Gender

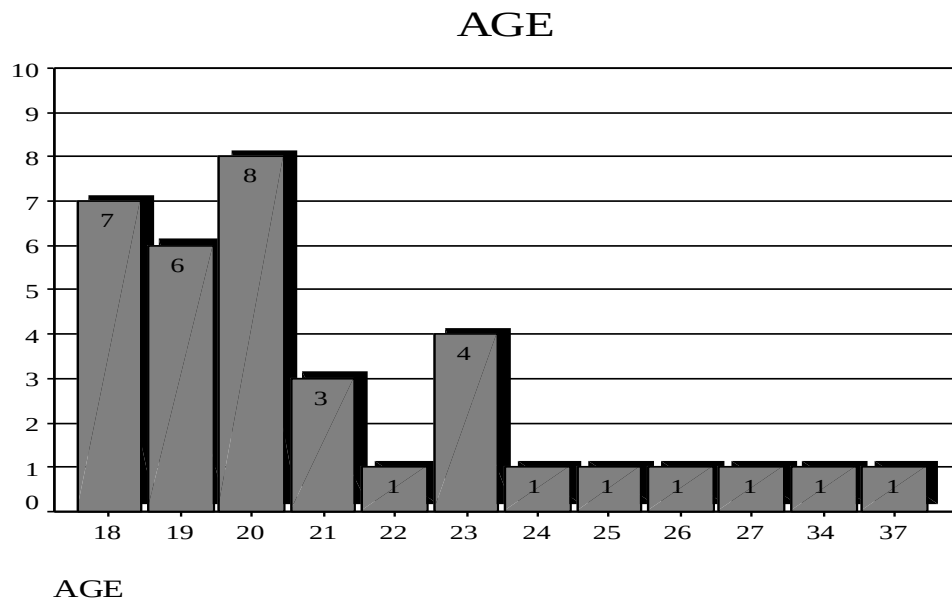


Figure B.1.2 - Pilot Distribution by Age

Appendix B.2

Competitive Sport Constructs

Factor loading tables including reliabilities

Table B.2.1 - Pilot Factor Loadings for Competitive Sport Involvement

Competitive Sport Involvement, Alpha = 0.92		
Q. No.	Item	Loading
15	I hardly ever play competitive sport	.939
6	I participate in sport of a competitive nature on a regular basis	.885
12	I participate in competitive sport out of school hours	.876
13	I play competitive sport at least three times a week	.871
3	How often do you play competitive sport at school outside of PE classes?	.786
1	How much do you play competitive sport and school?	.774
11	I play competitive sport on weekends	.753
4	How often do you play competitive sport outside of school?	.727
14	I participate in competitive sport almost every day	.716
5	How often do you play competitive sport on weekends?	.620
16	The only competitive sport I am involved in is PE classes and weekly school sport	.583
2	How often do you play competitive sport during PE classes?	.503
9	School sport afternoons are the only time I am involved in competitive sport	.375

Table B.2.2 - Pilot Factor Loadings for Competitive Sport Enjoyment

Competitive Sport Enjoyment, Alpha = 0.67		
Q. No.	Item	Loading
23	I would rather read a good novel than play competitive sport	.849
20	I would rather watch a movie than participate in competitive sport	.828
22	I would play competitive sport at school even if it wasn't part of my PE classes	.819
21	I really enjoy playing competitive sport	.801
18	I do not at all enjoy playing competitive sport	.790
17	I only participate in competitive sport in PE classes because I feel that I have to	.763
19	I play sport of a competitive nature at lunch times	.504
24	I only play competitive sport because my parents make me	.343

Table B.2.3 - Pilot Factor Loadings for Competitive Sport Success

Competitive Sport Success, Alpha = 0.67		
Q. No.	Item	Loading
27	When I compete in sport, I usually do well	.859
25	When I compete in sport, I mostly win	.750
26	When I compete in sport, I always lose	.726

Appendix B.3

Self-efficacy Constructs

Factor loading tables including reliabilities

Table B.3.1 - Pilot Factor Loadings for General Self-efficacy

General Self-efficacy, Alpha = 0.83		
Q. No.	Item	Loading
41	Failure just makes me try harder	.766
36	When I have something unpleasant to do, I stick to it until I finish it	.757
31	If I can't do a job the first time, I keep trying until I can	.722
44	I give up easily	.623
37	When I decide to do something new, I go right on to work on it	.612
30	One of my problems is that I cannot get down to work when I should	.609
33	I give up on things before completing them	.597
38	When trying to learn something new, I soon give up if I am not initially successful	.556
32	When I set important goals for myself, I rarely achieve them	.552
34	I avoid facing difficulties	.551
29	When I make plans, I am certain I can make them work	.464
43	I am a self-reliant person	.445
42	I feel insecure about my ability to do things	.379

Table B.3.2 - Pilot Factor Loadings for Academic Self-efficacy

Academic Self-efficacy, Alpha = 0.91		
Q. No.	Item	Loading
58	When I am old enough, I will go to university	.825
62	It is important to go to high school	.797
66	I usually understand my homework assignments	.773
72	I am smart	.747
74	It is not hard for me to get good grades in school	.723
73	I will quit school as soon as I can	.717
52	I will complete the HSC	.716
54	I always get good grades when I try hard	.712
70	I am a good reading student	.687
55	Sometimes I think an assignment is easy when the other kids in class think it is hard	.672
47	I would get better grades if I tried hard enough	.623
59	I am one of the best students in my class	.551
51	I am a good English student	.520
65	What I learn in school is not important	.477
68	It does not matter if I do well in school	.469
46	I work hard in school	.468
75	When the teacher asks a question I usually know the answer even if the other kids don't	.444
61	My teacher thinks I am smart	.431
64	My classmates usually get better grades than I do	.418
60	No one cares if I do well in school	.396
53	I go to a good school	.355
69	Kids who get better grades than I do get more help from the teacher than I do	.354
57	Adults who have good jobs probably were good students when they were kids	.341
71	Teachers like kids even if they do not always make good grades	.310

Table B.3.3 - Pilot Factor Loadings for PD/H Self-efficacy

PD/H Self-efficacy, Alpha = 0.94		
Q. No.	Item	Loading
78	I am a good PD/H student	.956
82	I can learn PD/H content well	.944
77	I could get the best grades in PD/H if I tried hard enough	.940
81	It is not hard for me to get good grades in PD/H	.877
76	I work hard in PD/H classes	.867
79	I am one of the best students in my PD/H class	.826
80	I usually do not get good grades in PD/H because it is too hard	.524

Appendix B.4

Achievement Constructs

Factor loading tables including reliabilities

Table B.4.1 - Pilot Factor Loadings for PD/H Achievement

PD/H Achievement, Alpha = 0.76		
Q. No.	Item	Loading
85	My position in this class was	.918
84	From my last report, My grade for this subject was	.819
83	Compared to the rest of the class, I rate myself as	.791

Table B.4.2 - Pilot Factor Loadings for English Achievement

English Achievement, Alpha = 0.55		
Q. No.	Item	Loading
86	Compared to the rest of the class, I rate myself as	.887
87	From my last report, My grade for this subject was	.746
88	My position in this class was	.592

Table B.4.3 - Pilot Factor Loadings for Mathematics Achievement

Mathematics Achievement, Alpha = 0.74		
Q. No.	Item	Loading
90	From my last report, my grade for this subject was	.841
89	Compared to the rest of the class, I rate myself as	.839
91	My position in this class was	.815